AL SCIENCES

PUBLIC LIBRARY
OCT 17 1949
DETROIT

INDUSTRIAL MEDICINE AND SURGERY

Volume 18 October 1949 Number 10

For mixed infections

FURACIN*†
SOLUBLE DRESSING
† (BRAND OF NITROFURAZONE)
CONTAINS 0.2% NITROFURAZONE (5-NITRO-2-FURALDEHYDE SEMICARBAZONE) IN A WATER SOLUBLE BASE.
CAUTION: TO BE DISPENSED ONLY BY OR ON THE PRESCRIPTION OF A PHYSICIAN.
DESCRIPTION OF PRODUCT AND USES AVAILABLE TO PHYSICIANS ON REQUEST.
AN ANTIBACTERIAL PREPARATION FOR TOPICAL APPLICATION
LABORATORIES Inc.
NORWICH, NEW YORK
ONE POUND, AVOIR.

Chronic, infected, cutaneous ulcers of hypostatic, decubital or diabetic origin, usually respond rapidly to topical Furacin therapy. Of 81 such cases specifically mentioned in the literature, good results were obtained in 65. The infection, odor and discharge usually diminished promptly without delay of healing. Furacin® brand of nitrofurazone, is available as Furacin Solution (N.N.R.) and Furacin Soluble Dressing (N.N.R.) containing Furacin 0.2%. These preparations are indicated for topical application *in the prophylaxis or treatment of infections of* wounds, second and third degree burns, cutaneous ulcers, pyodermas and skin grafts. *Literature on request.*

EATON LABORATORIES, INC., NORWICH, N. Y.

Downing, J. et al.: J. A. M. A. 133:299, 1947 • Johnson, H.: Arch. Dermat. & Syph. 57:348, 1948 • Miller, J. et al.: New York State J. Med. 47:2316, 1947 • Miller, R. et al.: North Carolina M. J. 9:574, 1948 • Shipley, E. et al.: Surg., Gynec. & Obst. 84:366, 1947.

Edocet Experientia

at the very first sign of a cold

STOP ***its development—***

antihistaminic therapy has been reported to abort the development of the common cold in 90% of the patients commencing therapy within the first hour of the appearance of symptoms.[1]

DETOUR ***distressing symptoms—***

antihistaminic therapy shortens the duration and decreases the severity of an established cold.[1,2]

BY-PASS ***spread of infection to others—***

the elimination of sneezing, lacrimation, rhinorrhea and coughing reduces cross-infection.[1]

CORICIDIN*

(Antipyretic-analgesic-antihistaminic)

combines the classical "A.P.C. formula" (Acetylsalicyclic acid 3.5 gr., Acetophenetidin 2.5 gr. and Caffeine 0 5 gr.) with *Chlor-Trimeton** the antihistaminic with minimal side-effects and greater effectiveness in doses as low as 2-4 mg.[3]

The Allergic Concept of the Common Cold: The symptoms of upper respiratory infections closely resemble those found in vasomotor rhinitis and hay fever. More histamine-like substances were found in the nasal secretions of persons suffering from colds than in allergic rhinitis.[4]

Dosage and Timing: Two CORICIDIN Tablets *at the very first indication* of a cold, then one tablet every three or four hours for three or four days. In established colds, one tablet every three or four hours for palliative effect.

Packaging: CORICIDIN Tablets, tubes of 12, bottles of 100 and 1000.

Bibliography: 1. Brewster, J. M.: Indust. Med. *18*:217, 1949. 2. Murray, H. C.: Indust. Med. *18*:215, 1949. 3. Tislow, R. and others: Federation Proc., Part I, *8*:338, 1949. 4. Troescher-Elam, E.; Ancona, G. R., and Kerr, W. J.: Am. J. Physiol. *145*:711, 1945.

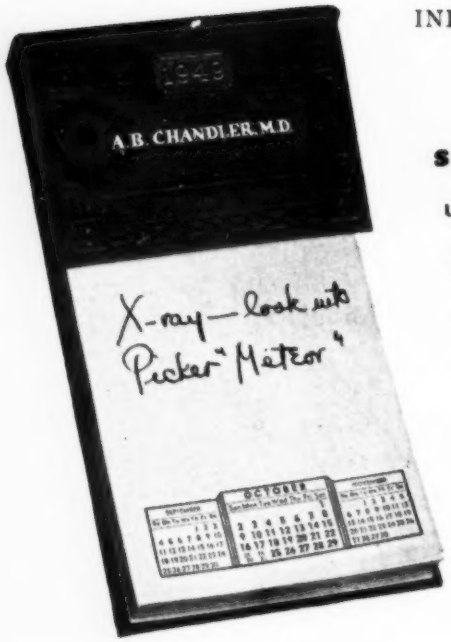
*T.M. Schering Corporation

CORICIDIN

Schering

CORPORATION

BLOOMFIELD • NEW JERSEY



some morning soon Dr. Chandler will come upon this reminder on his desk pad. Maybe there's one on *yours,* too—scribbled there in June, perhaps, right after the A.M.A. meeting. It was hot then, and you were in a wait-until-Fall mood.

Act on it now. *It's easy* . . . simply jot "Picker Meteor" on a prescription blank and mail it to us.

PICKER X-RAY CORPORATION
300 Fourth Ave., New York 10, N. Y.

Fits your X-ray needs to a "T"—
and your budget, too!
it's the
Picker "Meteor"

★
x-ray

all you expect . . . and more

as little as
$1495

INDUSTRIAL MEDICINE AND SURGERY

The Journal of Medicine in Industry

With which are consolidated "The Industrial Doctor" and "International Journal of Medicine and Surgery"

This magazine is published to promote sound thought concerning industrial medicine and the surgery of trauma. To that end it will contain articles, news items, reports, digests, and other presentations, together with editors' comments. The editorial policy is to encourage frank discussion. On this basis contributions are invited. The editors will exercise care in checking on the accuracy of data printed but in all other respects articles and opinions of which expression is allowed are the opinions of their authors—the editors reserving in all cases the right to comment on the same in the current or any subsequent issues as they may be inclined.

Volume 18 OCTOBER 1949 *Number 10*

CONTENTS

NUTRITION COURSE FOR EMPLOYEES' WIVES
Gradie R. Rowntree, M.D. 405
SOLUBILITY AND THE RELATIVE TOXICITY OF LEAD CHROMATE II
G. C. Harrold, Ph.D., and S. F. Meek, M.D. 407
PREVENTIVE MEDICINE IN INDUSTRY
S. M. Hoch, M.D., A. Gibson, M.D., and J. M. Carlisle, M.D. 410
MANAGEMENT OF INJURIES TO THE THORAX
William M. Tuttle, M.D. 419
MEASURES TO PREVENT COMPLICATIONS OF PHLEBOTHROMBOSIS
James Barron, M.D. 422
PLANTATION MEDICINE IN HAWAII
William B. Patterson, M.D. 426
TAKING THE BRRR OUT OF BERYLLIUM
Herbert T. Walworth 428
PROBLEMS IN THE MANAGEMENT OF THE CAUSALGIC STATES OF THE UPPER EXTREMITY
Albert S. Crawford, M.D. 432
DERMATOLOGICAL HAZARDS IN THE CIGAR INDUSTRY
M. H. Samitz, M.D., Primo Mori, M.D. and Charles-Francis Long, M.D. 434
PERIPHERAL VASCULAR DISEASE
Frank V. Theis, M.D. 440
A CHALLENGE TO THE MEDICAL PROFESSION
David D. Henry 446
ASSOCIATION NEWS 449
EDITORIAL 450
PERSONAL NEWS 6
NEWS, COMMENT AND OPINION 25
DR. PILGRIM 33
(ADVERTISER'S INDEX ..... 36)

[NOTE: The opinions expressed in the editorials of this Journal are not to be considered as necessarily representing the opinions of any associated organizations.]

INDUSTRIAL MEDICINE and SURGERY, The Journal of Medicine in Industry: Entered as second class mail matter August 28, 1941, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879. Additional entry at Sheboygan, Wisconsin. Published on the fifth of each month by INDUSTRIAL MEDICINE PUBLISHING COMPANY, Chicago (publishers also of AMERICAN INDUSTRIAL HYGIENE ASSOCIATION QUARTERLY). STEPHEN G. HALOS, President; A. D. CLOUD, Publisher; C. O. SAPPINGTON, M.D., DR. P.H., Editor; HAROLD A. HOOPER, Treasurer; DORIS FLOURNOY, Editorial Assistant; STEPHEN G. HALOS, Advertising and Business Manager. Member, Audit Bureau of Circulations. PUBLICATION, EDITORIAL and EXECUTIVE OFFICES; 605 North Michigan Avenue, Chicago 11, Illinois. Subscription $6.00 per year in the United States; $6.50 per year in Canada; $7.00 per year in other countries. Single copies 75 cents. Title Registered in United States Patent Office. Rd. Canada, 1942. Copyright, 1949, by Industrial Medicine Publishing Company, Chicago. CHANGE OF ADDRESS: FOUR weeks' notice required; changes cannot be made without old address as well as new; please furnish postal zone number for new address if city requires it.

INDUSTRIAL AND RAILWAY MEDICAL AND SURGICAL ASSOCIATIONS

INDUSTRIAL MEDICINE AND SURGERY

is the official publication of these organizations but is independently owned and published

AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS

OFFICERS

President:
ALFRED H. WHITTAKER, M.D.,
Consultant in Industrial Surgery,
1427 East Jefferson Avenue,
Detroit 7, Michigan.

President-Elect:
EDWARD H. CARLETON, M.D.,
Inland Steel Company,
East Chicago, Indiana.

First Vice-President:
ADOLPH G. KAMMER, M.D.,
Carbide & Carbon Chemicals Corp.,
South Charleston 3, West Virginia.

Second Vice-President:
E. A. IRVIN, M.D.,
Cadillac Motor Division,
General Motors Corporation,
Detroit 32, Michigan.

Secretary:
FREDERICK W. SLOBE, M.D.,
2024 S. Western Avenue,
Chicago 8, Illinois.

Treasurer and Managing Director:
EDWARD C. HOLMBLAD, M.D.,
28 East Jackson Boulevard,
Chicago 4, Illinois.

DIRECTORS
1948-1950

JAMES M. CARLISLE, M.D.,
Merck & Company, Rahway, N. J.

HAROLD M. HARRISON, M.D.,
George Weston Limited, Canada
302 Bay Street, Toronto 1, Ontario.

O. A. SANDER, M.D.,
Consultant Occupational Diseases
and Industrial Health,
710 Plankinton Avenue,
Milwaukee 3, Wisconsin.

EARL F. LUTZ, M.D.,
General Motors Corporation,
13-211 General Motors Bldg.,
Detroit 2, Michigan.

ROBERT COLLIER PAGE, M.D.,
Standard Oil Co. (New Jersey),
30 Rockefeller Plaza, New York 20.

GEORGE F. WILKINS, M.D.,
New Eng. Tel. & Telegraph Co.,
245 State Street, Boston 9.

DIRECTORS
1949-1951

V. C. BAIRD, M.D.,
Humble Oil & Refining Company,
Box 2180, Houston, Texas.

HARLEY L. KRIEGER, M.D.,
Ford Motor Company,
Dearborn, Michigan.

C. O. SAPPINGTON, M.D., DR. P.H.,
Industrial Health Consultant,
330 South Wells Street,
Chicago 6, Illinois.

JEROME W. SHILLING, M.D.,
The Pacific Telephone & Telegraph Co.,
740 S. Olive Street, Los Angeles 14.

JAMES H. STERNER, M.D.,
Eastman Kodak Company,
Rochester 4, New York.

C. RICHARD WALMER, M.D.,
Medical Director, Industrial Hygiene
Foundation, Mellon Institute,
Pittsburgh 13, Pennsylvania.

DISTRICT COUNSELLORS
1949-1950

"A"—DANIEL L. LYNCH, M.D., MELVIN N. NEWQUIST, M.D., Co-counselors —Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island, Vermont.

"B"—CHARLES B. STACY, M.D., — Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia.

"C"—EARLE A. IRVIN, M.D., — Michigan, Ohio, Pennsylvania, West Virginia.

"D"—H. GLENN GARDINER, M.D.,—Illinois, Indiana, Iowa, Minnesota, Missouri, Montana, Nebraska, North Dakota, South Dakota, Wisconsin, Wyoming.

"E"—VALLIANT C. BAIRD, M.D., — Arkansas, Colorado, Louisiana, New Mexico, Texas.

"F"—FENN E. POOLE, M.D., ROBERT T. LEGGE, M.D., Co-counselors — Arizona, California, Idaho, Nevada, Oregon, Utah, Washington.

"G"—FRANK R. GRIFFIN, M.D.,—Canada.

COMMITTEES
1949-1950

Committee on Alcoholism:
JOHN L. NORRIS, M.D., Chairman, R. G. BELL, M.D., GEORGE H. GEHRMANN, M.D.

Certification Committee:
FREDERICK W. SLOBE, M.D., Chairman, ANTHONY J. LANZA, M.D., EARL F. LUTZ, M.D., RAYMOND HUSSEY, M.D., ROBERT A. KEHOE, M.D., T. LYLE HAZLETT, M.D.

Convention (1950) Committee:
EDWARD H. CARLETON, M.D., Chairman, JOSEPH H. CHIVERS, M.D., CHARLES DRUECK, M.D., H. GLENN GARDINER, M.D., ROBERT M. GRAHAM, M.D., S. M. HANAUER, M.D., J. W. HILBERT, M.D., ELI S. JONES, M.D., HARLEY L. KRIEGER, M.D., HEDWIG S. KUHN, M.D., HARRY E. MOCK, M.D., ARTHUR K. PETERSON, M.D., SAMUEL J. PETRONELLA, M.D., JOHN J. PRENDERGAST, M.D., CARLO SCUDERI, M.D.

Foundation Fund Committee:
EDWARD H. CARLETON, M.D., Chairman, CHARLES B. CRONIN, M.D., JOHN W. HILBERT, M.D., JOSEPH T. NOE, M.D., JOHN J. POUTAS, M.D., McIVER WOODY, M.D.

Health Achievement in Industry Award:
C. RICHARD WALMER, M.D., Chairman, KIEFFER D. DAVIS, M.D., JOHN NEILSON, JR., M.D., JOHN L. NORRIS, M.D., FREDERICK H. SHILLITO, M.D.

History Committee:
ALFRED H. WHITTAKER, M.D., Chairman, OTTO P. GEIER, M.D., C. O. SAPPINGTON, M.D., DR. P. H., MR. HENRY B. SELLECK, LOYAL A. SHOUDY, M.D.

Knudsen Award Committee:
EARL F. LUTZ, M.D., Chairman, T. LYLE HAZLETT, M.D., OSCAR A. SANDER, M.D., R. R. SAYERS, M.D., HAROLD A. VONACHEN, M.D.

Medical Education & Fellowship:
M. H. KRONENBERG, M.D., Chairman, LEONARD J. GOLDWATER, M.D., CLIFFORD H. KEENE, M.D., ROBERT A. KEHOE, M.D., EMMETT B. LAMB, M.D., WILLIAM F. LAUTEN, M.D., STUART F. MEEK, M.D., WILLIAM A. SAWYER, M.D., VINCENT T. WILLIAMS, M.D.

Membership & Qualification Committee:
NEWTON E. LEYDA, M.D., Chairman, HERBERT R. ATHERTON, M.D., EDWIN DEJONGH, M.D., JOHN F. SHRONTS, M.D., L. HOLLAND WHITNEY, M.D., JOSEPH L. ZEMENS, M.D.

Meritorious Award Committee:
DANIEL L. LYNCH, M.D., Chairman, EDWARD C. HOLMBLAD, M.D., CAREY P. MCCORD, M.D., C. O. SAPPINGTON, M.D., DR. P. H., CHARLES F. SHOOK, M.D., RICHARD A. SUTTER, M.D., LYNDLE R. MARTIN, M.D.

National Home Committee:
ALFRED H. WHITTAKER, M.D., Chairman, CHARLES DRUECK, M.D., EDWARD C. HOLMBLAD, M.D., WILLIAM D. MCNALLY, M.D., ARTHUR R. METZ, M.D.

Past-Presidents Committee:
HAROLD A. VONACHEN, M.D., Chairman, HENRY S. BROWN, M.D., DANIEL L. LYNCH, M.D., HARRY E. MOCK, M.D., FREDERICK W. SLOBE, M.D.

Public Relations Committee:
CHARLES E. DUTCHESS, M.D., Chairman, ALLAN J. FLEMING, M.D., ARLINGTON F. LECKLIDER, M.D., JEROME W. SHILLING, M.D., HARRY E. TEBROCK, M.D., R. LOMAX WELLS, M.D., EARL E. WESTON, M.D.

Publications & Editorial Committee:
ROBERT COLLIER PAGE, M.D., Chairman, ARBIE LEROY BROOKS, M.D., LEONARD S. ARLING, M.D., HENRY S. BROWN, M.D., REEVE M. BROWN, M.D., J. EWART CALDWELL, M.D., RUSSELL C. KIMBALL, M.D., J. HUBER WAGNER, M.D.

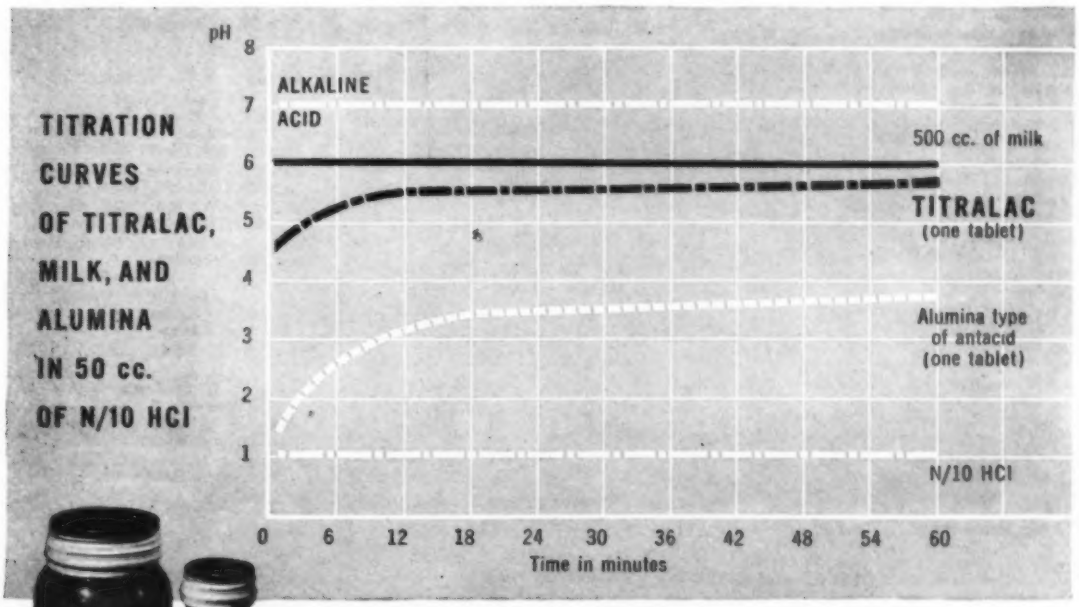
Section Meetings Committee:
ADOLPH G. KAMMER, M.D., Chairman, PAUL J. BAMBERGER, M.D., MARION W. JOCZ, M.D., WILLIAM F. LAUTEN, M.D., CHARLES BROWN STACY, M.D., REX HAMILTON WILSON, M.D.

Tuberculosis Committee:
LEO PRICE, M.D., Chairman, RICHARD D. MUDD, M.D.

Workmen's Compensation & Insurance:
CARL T. OLSON, M.D., Chairman, THORNTON I. BOILEAU, M.D., J. EWART CALDWELL, M.D., JAMES S. CHALMERS, M.D., BENJAMIN M. FREES, M.D., THOMAS W. NALE, M.D., J. T. SCOTT, JR., M.D., WILLIS M. WEEDEN, M.D., J. DANIEL WILLEMS, M.D.

1950 AAIP&S CONFERENCE, CHICAGO, APRIL 23-29, 1950

NON-SURGICAL TREATMENT



OF PEPTIC ULCER

Gastroenterologists have long endorsed the use of milk, when practicable, for its ideal acid-converting power and buffering capacity.[1, 2] In a recent comprehensive paper, Aaron[3] and others[4, 5, 6] express a preference for calcium carbonate as the antacid to be employed.

TITRALAC, by combining proper proportions of purified calcium carbonate and the amino acid glycine, *provides an acid-converting and buffering effect practically equivalent to that of fresh milk*, as shown in the above chart.* Just 1 TITRALAC tablet is equivalent to an 8-ounce glass of milk in antacid effect and provides quick and long-lasting relief from the distressing symptoms of hyperacidity.

The very agreeable taste of soft-massed TITRALAC tablets, which is achieved without employing taste-disguising, acid-generating sugars in the formula, makes them as acceptable to patients as an after-dinner mint. Prescribing TITRALAC eliminates the probability of unfavorable reactions often associated with the taking of metallic-tasting, astringent tablets or liquids, and ensures adherence to the prescribed dosage.

TITRALAC tablets are supplied in bottles of 100 and convenient-to-carry packages of 40. TITRALAC powder is also available, in 4-oz. jars.

REFERENCES

1. Rossett, N. E., and Flexner, J.: Ann. Int. Med. 18: 193 (1944). 2. Freezer, C. R. E.; Gibson, C. S., and Matthews, E.: Guy's Hosp. Reports 78: 191 (1928). 3. Aaron, A. H.; Lipp, W. F., and Milch, E.: J. A. M. A. 139: 514 (Feb. 19) 1949. 4. Kirsner, J. B., and Palmer, W. L.: Illinois M. J. 94: 357 (Dec.) 1948. 5. Kimball, S.: in Practice of Medicine (Tice). Hagerstown, Md., W. F. Prior Company, Inc., 1948; p. 210. 6. Special Article: M. Times 76: 10 (Jan.) 1948.

* The formula of TITRALAC is one whose composition and mode of action are recognized by U.S. Patent No. 2,429,596.

Samples and literature to physicians upon request.

SCHENLEY LABORATORIES, INC., 350 FIFTH AVENUE, NEW YORK 1, N. Y.

©Schenley Laboratories, Inc.

New England Conference of Industrial Physicians and Surgeons

Officers

DONALD V. BAKER, M.D., President
10 Broad Street,
Boston, Massachusetts.

C. FREDERICK YEAGER, M.D., Vice-President
Chairman Committee of Industrial Health of the State of Connecticut,
178 Jackman Street, Bridgeport, Connecticut.

J. ALLAN THOMPSON, M.D., Secretary & Treasurer
Assistant Medical Director, New England Tel. & Tel. Co.,
245 State Street, Boston.

Board of Directors

JAMES I. ROBERT, M.D.,
Medical Director New England Power Service Co.,
441 Stuart Street, Boston.

KARL T. BENEDICT, M.D.,
Medical Director, Norton Company,
111 Worcester Street,
West Boylston, Massachusetts.

TIMOTHY F. ROCK, M.D.,
Nashua Mfg. Co., 77 Main Street,
Nashua, New Hampshire.

ROBERT T. HENRY, M.D.,
Newman Crosby Company,
Pawtucket, Rhode Island.

BLINN W. RUSSELL, M.D.,
Bates Mfg. Company, 98 Pine Street,
Lewiston, Maine.

Component Society of the American Association of Industrial Physicians and Surgeons.

Rhode Island Society of Industrial Physicians and Surgeons

Officers

President
RICHARD F. MCCOART, M.D.,
Universal Winding Company,
Cranston.

Vice-President
THOMAS A. EGAN, M.D.,
New Haven Railroad, Providence.

Secretary
JAMES P. DERRY, M.D.,
Division of Industrial Hygiene,
State Department of Health,
Providence.

Treasurer
ROBERT T. HENRY, M.D.,
Newman Crosby Company,
Pawtucket.

Board of Directors

FRANK A. FERLIANO, M.D.,
Providence Tuberculosis League,
Division of Industrial Tuberculosis,
State of Rhode Island, Providence.

REMINGTON P. CAPWELL, M.D.,
Whittet-Higgins Co., Providence

EDWARD F. DOUGHERTY,
Liberty Tool and Gauge Co.,
Providence.

JOSEPH C. JOHNSTON, M.D.,
Texas Company, Providence.

CHARLES L. FARRELL, M.D.,
Collyer Insulated Wire Co.,
Pawtucket.

Section of the New England Conference of Industrial Physicians and Surgeons.

Association of Railway and Industrial Physicians and Surgeons of Kansas City

Officers

F. L. FEIERABEND, M.D., President
H. F. FLANDERS, M.D., Vice-President
L. A. O'BRIEN, M.D., Secretary-Treas.

Directors

CARL LINDQUIST, M.D
JOHN E. CASTLES, M.D.
F. L. FEIERABEND, M.D.
VINCENT T. WILLIAMS, MD.
L. A. O'BRIEN, M.D.

Component Society of the American Association of Industrial Physicians and Surgeons.

NEWS

STUART F. MEEK, M.D., who has been associated with Wayne University School of Occupational Health at Detroit, has been appointed Medical Director of Willard Storage Battery Company at Cleveland, Ohio. DR. MEEK'S appointment was effective September 1.

MARY M. CRAWFORD, M.D., who, for many years, was head of the health department of the Federal Reserve Bank of New York, on June 22 received the Kappa Kappa Gamma Alumnae Achievement Award, in recognition of her contribution to the community.

THEODORE F. HATCH has been appointed Professor of Industrial Health Engineering in the University of Pittsburgh Graduate School of Public Health. MR. HATCH will continue as Research Director for Industrial Hygiene Foundation, on a part-time basis.

KENNETH E. MARKUSON, M.D., M.P.H., formerly director of the Bureau of Industrial Health, Michigan Department of Health, joined the staff of the Connecticut State Department of Health on July 1, 1949. He assumes the post of assistant to ALBERT S. GRAY, M.D., director of this department's bureau of industrial hygiene. DR. MARKUSON is well known in the field of industrial hygiene. He is a Fellow of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, president-elect of the American Conference of Governmental Industrial Hygienists, and president of the Michigan Association of Industrial Physicians and Surgeons. He received his medical degree from Creighton University Medical School, Omaha, Nebraska, and his public health degree from Johns Hopkins University School of Hygiene and Public Health, Baltimore.

Dr. Rehm's New Department

COMPLETE medical facilities for the more than 3,000 Trans World Airline employees in the Atlantic Region have recently been established at New York's La Guardia Field through the consolidation of the airline's international and domestic operations division. The medical department, under the direction of

The Industrial Doctor
Now combined with INDUSTRIAL MEDICINE and SURGERY

New York State Society of Industrial Medicine, Inc.

Officers

RUSSELL C. KIMBALL, M.D., *President*
—Consolidated Edison Co.,
4 Irving Place, New York.

PHILIP L. FORSTER, M.D., *Vice-President*
—367 State St., Albany.

IRVING GRAY, M.D., *Secretary*
—25 Plaza St., Brooklyn.

JOHN J. BLACKFORD, *Executive Secretary and Treasurer.*
—40 East 51st St., New York.

Executive Council

HALCYON HALSTED, M.D.,
Pelham Manor.

FRANCIS J. RYAN, M.D.,
Syracuse.

CHARLES D. SQUIRES, M.D.,
Binghampton.

ANTHONY AVATA, M.D., New York,
Hartford Accident and Indemnity Co.

HARRY V. SPAULDING, M.D., New York,
General Accident Co.

CHRISTOPHER STRAHLER, JR., M.D.,
Albany.

REEVE M. BROWN, M.D.,
Buffalo.

JOHN J. WITTMER, M.D., New York,
Consolidated Edison Co.

Component Society of the American Association of Industrial Physicians and Surgeons.

New Jersey Association of Industrial Physicians and Surgeons

Officers

A. GIBSON, M.D., President
—Merck & Co., Rahway, N. J.

C. S. MCKINLEY, M.D., Vice-President
—Bakelite Corp., Bound Brook, N. J.

G. A. PAUL, M.D., Secretary
—Hyatt Bearings Div, General Motors Corp., Harrison, N. J.

E. F. BALSBAUGH, M.D., Treasurer
—E. I. du Pont deNemours Co., Grasselli, N. J.

Directors

J. M. CARLISLE, M.D.,
Merck & Co, Inc., Rahway, N. J.

E E. EVANS, M.D.
E. I. du Pont deNemours Co.
Dye Works Hospital, Deepwater, N. J.

A. F. MANGELSDORFF, M.D.
Calco Chemical Div., Bound Brook

Component Society of the American Association of Industrial Physicians and Surgeons.

Michigan Association of Industrial Physicians and Surgeons

Officers

K. E. MARKUSON, M.D., President,
532 Division Street,
East Lansing, Michigan.

JOSEPH L. ZEMENS, M.D., Pres.-Elect,
1580 E. Grand Boulevard,
Detroit 32, Michigan.

O. J. PRESTON, M.D., Vice-President,
300 North Chevrolet Ave.,
Flint, Michigan.

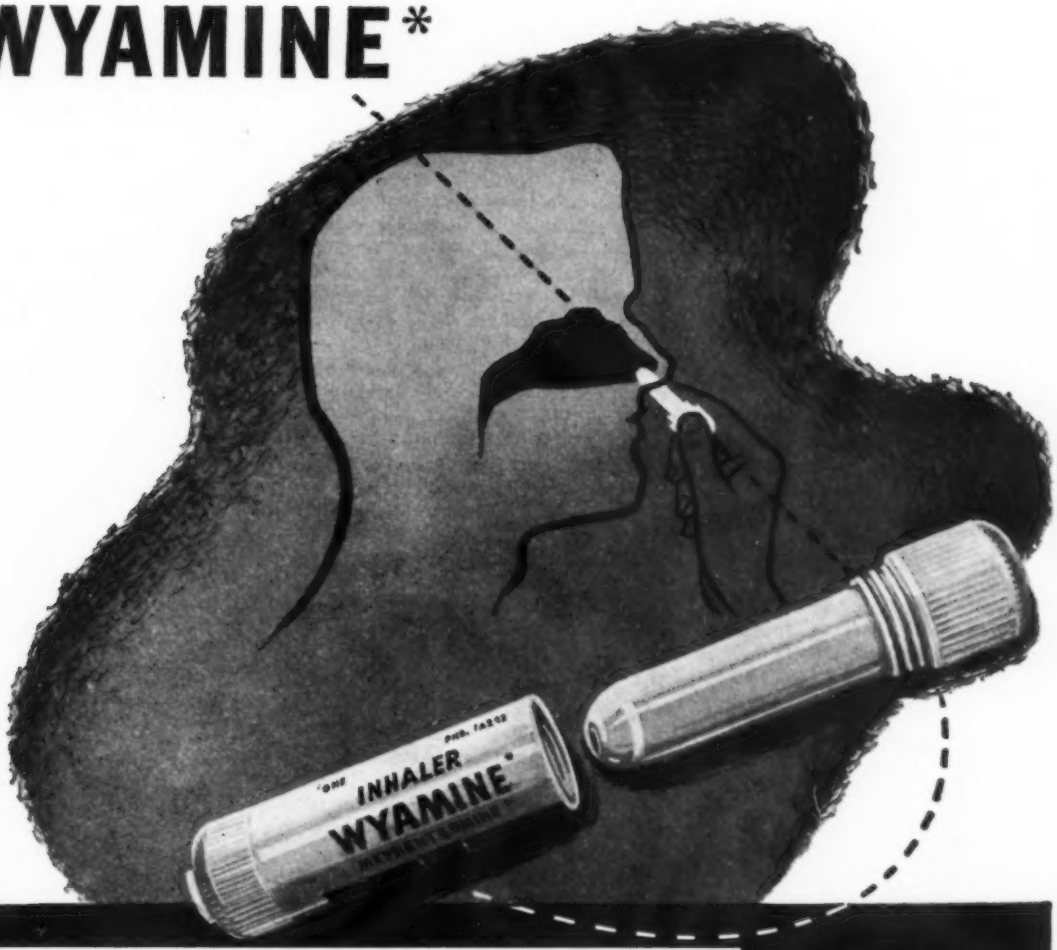
T. I. BOILEAU, M.D., Secretary-Treasurer,
16-546 Parkside,
Detroit, Michigan.

Board of Directors

A. L. BROOKS, M.D., Flint.
J. D. MILLER, M.D., Grand Rapids.
E. A. IRVIN, M.D., Detroit.

Component Society of the American Association of Industrial Physicians and Surgeons.

WYAMINE*



The action of WYAMINE is so effective that the nasal passages clear up almost immediately after two or three inhalations from the Inhaler in each nostril. And the remarkable feature of Wyamine is that this medication can be used just before retiring without disturbing a pleasant night's rest . . . maximum efficacy with minimum stimulation.

Available: Inhaler WYAMINE • SOLUTION WYAMINE SULFATE • SOLUTION WYAMINE-TYROTHRICIN • These solutions may be used with dropper or JETOMIZER®. • WYAMINE-PENICILLIN (PENICILLIN WITH VASOCONSTRICTOR) CAPSULES for Preparation of Nasal Solution. For use by Proetz displacement technique.

*Trademark, brand of Mephentermine (N-methyl-phenyl-tertiary butylamine)

to clear nasal congestion without discomfort •

WYETH INCORPORATED • Philadelphia 3, Pa. Wyeth®

Western Association of Industrial Physicians and Surgeons

Officers

President, RODNEY R. BEARD, M.D.,
Medical Superintendent, Pan American World Airways
Vice-President, E. P. LUONGO, M.D.,
Medical Director, General Petroleum Corporation
Secretary, CHRISTOPHER LEGGO, M.D.,
Medical Director, California & Hawaiian Sugar Refining Corp., Ltd.
Treasurer, JOHN E. KIRKPATRICK, M.D.,
San Francisco, California
Assistant Secretary, EDITH PECK,
California & Hawaiian Sugar Ref. Corp.

Directors

LOUIS D. CHENEY, M.D.—1950
Los Angeles, California.
JOHN R. ERWIN, M.D.,—1950
Medical Director, Boeing Airplane Co.
HOMER S. ELMQUIST, M.D.
Los Angeles, California.
CLARENCE L. LLOYD, M.D.
North American Aviation, Inc.
FENN E. POOLE, M.D.
Glendale, California
EDWARD E. DART, M.D.
Oakland, California

Chairman, Board of Directors

JEROME W. SHILLING, M.D.
Los Angeles, California.

Component Society of the American Association of Industrial Physicians and Surgeons.

Central States Society of Industrial Medicine and Surgery

Officers

President
DR. THOMAS C. BROWNING, Chicago
President-Elect
DR. EMMETT B. LAMB, Indianapolis
Vice-President
DR. H. GLENN GARDINER, Chicago
Secretary-Treasurer
DR. CHARLES DRUECK, 55 E. Washington, Chicago 2, Ill.

Board of Governors

1950—DR. MELVIN L. HOLE, Danville, Ill.
DR. BRYCE B. REEVE, Chicago, Ill.
DR. WILLIAM G. BESSMER, Davenport, Ia.
DR. OSCAR A. SANDER, Milwaukee, Wis.
DR. JOSEPH H. THOMAS, Chicago.
1951—DR. ROBERT M. GRAHAM, Mdse. Mart, Chicago
DR. JAMES J. CALLAHAN, Chicago.
DR. DONALD C. CONZETT, Dubuque, Ia.
DR. JOHN F. SHRONTS, Minneapolis, Minn.
DR. ELSTON L. BELKNAP, Milwaukee, Wis.
1952—DR. D. ORIS CONLEY, Streator, Ill.
DR. DANIEL E. DORCHESTER, Sturgeon Bay, Wis.
DR. FELIX JANSEY, Chicago, Ill.
DR. JOHN L. ROCK, Ogelesby, Ill.
DR. RAY S. WESTLINE, Chicago, Ill.

Component Society of the American Association of Industrial Physicians and Surgeons.

Territorial Association of Plantation Physicians

Officers

President
W. B. PATTERSON, M.D.,
Puunene, Maui, T.H.
Vice-President
A. L. DAVIS, M.D.,
Wailalua, Oahu, T.H.
Secretary-Treasurer
FRANK HATLELID, M.D.,
Wailalua, Oahu, T.H.
Executive Secretary
DORIS LARSON, 1133 Punchbowl,
Honolulu, T.H.

Component Society of the American Association of Industrial Physicians and Surgeons.

DR. ROBERT REHM, former Army flight surgeon and now regional supervisor of medical services for TWA, is one of the most modern and completely equipped units in the airline industry. The 11 separate rooms which comprise the medical unit include an audio room; an x-ray room, where a dental x-ray machine is also located, and an adjacent dark room; a complete examining room; and a laboratory and emergency clinic, with adequate office space for the physician, nurses and secretarial staff. The new Medical Department will operate as an emergency unit for the treatment of industrial injuries as well as a medical examining station. Among its major functions is the health of the more than 1,000 international and domestic flight personnel in the Atlantic Region, in addition to providing medical services for all employees in the region. Eight persons, including five nurses, a technologist and two secretaries, comprise the present personnel under DR. REHM. Two more physicians soon will be appointed to the staff.

In-Plant Training

SYLVANIA Electric Products Corporation, Central Medical Department, under the direction of DR. H. E. TEBROCK will start its second in-plant training program in industrial nursing for qualified graduate nurses. This program is being conducted in cooperation with the Boston College of Nursing and has met with a great deal of success. Arrangements are being completed for a similar program for in-plant physician training in industrial medicine. DR. TEBROCK explained that, "we anticipate appealing to the senior medical student as well as resident interns and younger practitioners for interest and participation in the specialty of occupational medicine. Our Boston Electronic Plant will serve as our major in-plant training location and our program will include didactic instruction in preventive medicine, industrial nursing, industrial hygiene and toxicology, safety, and loss prevention."

A. Victor Nasatir, M.D.

THE sudden death of DR. A. VICTOR NASATIR on August 5, 1949, was a shock to all who knew him. DR. NASATIR has been closely associated with the administrative

Florida Association of Industrial and Railway Surgeons

Officers

President
FREDERICK H. BOWEN, M.D.,
2000 Park St., Jacksonville, Fla.
Vice-President
P. J. MANSON, M.D.,
8037 N.E. 2nd Ave., Miami, Fla.
Secretary-Treasurer
JOHN H. MITCHELL, M.D.,
241 W. Ashley, Jacksonville, Fla.

Directors

F. D. GRAY, M.D., Orlando, Fla.
K. A. MORRIS, M.D., Jacksonville, Fla.
F. A. VOGT, M.D., Miami, Fla.
L. J. NETTO, M.D., West Palm Beach, Fla.

Component Society of the American Association of Industrial Physicians and Surgeons.

Association of Mine Physicians

Officers

GEO. W. EASLEY, M.D., President
Williamson, West Virginia
E. M. HOWARD, M.D., Vice-President
Harlan, Kentucky.
J. C. LAWSON, M.D., Secretary-Treasurer
Williamson, West Virginia.
W. R. LUNDY, Executive Secretary
Offices: Williamson, W. Va.
Pineville, Ky.

Committee on Organization

R. O. ROGERS, M.D., Chairman, Bluefield, W. Va.
C. L. HARSHBARGER, M.D., Norton, Va.
CARL E. AUSMUS, M.D., Jellico, Tenn.
J. A. BENNETT, M.D., Algoma, W. Va.
J. C. MOORE, M.D., Keen Mountain, Va.
T. M. PERRY, M.D., Jenkins, Ky.
P. E. BLACKBERRY, M.D., Louisville, Ky.
CARL A. GROTE, M.D., Huntsville, Ala.
C. N. CARRAWAY, M.D., Birmingham, Ala.

Component Society of the American Association of Industrial Physicians and Surgeons.

Chicago Society of Industrial Medicine and Surgery

Officers

BURTON C. KILBOURNE, M.D., Chicago.
President
T. R. HINCHION, M.D., Chicago.
Vice-President
CHARLES DRUECK, M.D., Chicago.
Secretary-Treasurer

Board of Governors

Terms to Expire 1950.
KARL G. RUNDSTROM, M.D., Chicago.
GEORGE W. BOHR, M.D., Chicago.
GERALD J. FITZGERALD, M.D., Chicago.
Terms to Expire 1951.
DWIGHT I. GEARHART, M.D., Chicago.
JOHN R. MERRIMAN, M.D., Evanston.
CARLO SCUDERI, M.D., Chicago.
Terms to Expire 1952.
FELIX JANSEY, M.D., Chicago.
BILLE HENNAN, M.D., Chicago.
J. V. WALKER, M.D., Chicago.

Milwaukee Association of Industrial Physicians and Traumatic Surgeons

Officers

President
S. H. WETZLER, M.D.,
606 W. Wisconsin Ave., Milwaukee.
Vice-President
ELSTON L. BELKNAP, M.D.,
231 W. Wisconsin Ave., Milwaukee.
Secretary-Treasurer
GEORGE H. HOFFMANN, M.D.,
7006 W. Greenfield Ave., Milwaukee.

Board of Directors

U. E. GERHARD, M.D.,
1332 S. 16th Street, Milwaukee.
H. G. OAKLAND, M.D.
1651 N. 12th Street, Milwaukee.
EDWARD QUICK, M.D.,
411 E. Mason St., Milwaukee.
DAVID MEHIGAN, M.D.,
231 W. Wisconsin Ave., Milwaukee.

and now even greater safety

in sulfonamide therapy

TRICOMBISUL*

A COMBINATION OF SULFA*CETIMIDE*, SULFADIAZINE AND SULFAMERAZINE

The superior clinical efficacy and enhanced safety of triple sulfonamide mixtures have been well established. Now, even greater safety and clinical effectiveness have been achieved by substituting sulfacetimide for the less desirable sulfathiazole. Sensitivity reactions often encountered with sulfathiazole are rarely observed with sulfacetimide.

Lehr[1] states that this new combination is "a highly satisfactory sulfonamide mixture because of its low toxicity, excellent tissue distribution and good therapeutic efficiency."

TRICOMBISUL: Tablets of 0.5 Gm. containing 0.166 Gm. each of sulfa*cetimide*, sulfadiazine and sulfamerazine in bottles of 100 and 1000.

1. Lehr, D.: To be published.

*TRICOMBISUL trade-mark of Schering Corporation

Schering CORPORATION

BLOOMFIELD, NEW JERSEY

TRICOMBISUL

★ AMERICAN ASSOCIATION OF RAILWAY SURGEONS ★

Officers

President:
RAYMOND B. KEPNER, M. D., Chicago, Illinois

Vice-Presidents:
GLENN D. WHITCOMB, M. D., Omaha, Nebraska
D. RAY MURDOCK, M. D., Greensburg, Pennsylvania
IRWIN SCHULZ, M. D., Milwaukee, Wisconsin

Treasurer:
THEODORE L. HANSEN, M.D., 139 West Van Buren Chicago 5, Wabash 2-3200, Ext. 220

Secretary:
CHESTER C. GUY, M.D., 5800 Stony Island Avenue Chicago 37, Midway 3-9200

Executive Board

ARTHUR R. METZ, M.D., Chairman, Chicago, Illinois

J. ROSCOE MILLER, M.D., Chicago, Illinois

MILTON B. CLAYTON, M.D , Washington, D. C.

ROBERT M. GRAHAM, M.D., Chicago, Illinois

ALEXANDER M. W. HURSH, M.D., Philadelphia, Pa.

WILLIAM W. LEAKE, M.D., Chicago, Illinois

62nd Annual Meeting, April 4-6, 1950, at the Drake Hotel, Chicago

American Association of Industrial Dentists

Officers

President:
EDWARD R. ASTON, D.D.S., Pennsylvania Department of Health, Harrisburg, Pennsylvania.

President-Elect:
LEONARD S. MORVAY, D.D.S., 30 Central Avenue, Newark, New Jersey.

Secretary:
F. J. WALTERS, D.D.S., Room 4068 Federal Security Building—South Washington 25, D.C.

Treasurer:
E. G. Smith, D.D.S.,

Directors

1950

LYMAN D. HEACOCK, D.D.S., U.S. Veterans Hospital, Nashville, Tennessee.

EARL H. THOMAS, D.D.S., 55 E. Washington Street , Chicago, Illinois.

1951

C. RUSSELL FRICKE, D.D.S., Philadelphia Company, Pittsburgh, Pennsylvania.

J. H. FREDRICK, D.D.S., E. I. DuPont Company, Wilmington, Delaware.

1952

V. J. FORNEY, D.D.S.; M.P.H., 4604 S. Chelsea Lane, Bethesda, Maryland.

Auto Medical Association of the United States; Secretary: DR. D. S. BRACHMAN, 1016 Dime Bldg., Detroit 24.

American Academy of Occupational Medicine: Secretary, JAMES J. CARLISLE, M.D., 550 Hillcrest, Westfield, N. J.

American Association for the Advancement of Science, 1515 Massachusetts Ave., N.W., Washington 5, D.C.

American Association of Industrial Nurses, 654 Madison Ave., New York 21, N.Y. GLADYS L. DUNDORE, R.N., Executive Secretary.
April 23-29, 1950, Chicago.

American Chemical Society, 1155 Sixteenth St., N.W., Washington 6, D.C. A. H. EMERY, Secretary.

American College of Physicians, 4200 Pine St., Philadelphia 4, Pa. E. R. LOVELAND, Secretary.

American College of Surgeons, 40 East Erie St., Chicago 11, Ill.

phases of industrial hygiene since he established the Division of Industrial Hygiene in the Los Angeles City Health Department in 1939. Excepting for the four years spent in military service, he occupied the position of Director of this Division until the time of his death. During the war, DR. NASATIR was commissioned as Captain in the Medical Corps with his first assignment as Industrial Medical Director at Ogden Arsenal. He was then sent overseas as Chief of Public Health, Headquarters First Army, and was awarded many honors for meritorious service, including the Bronze Star. The Republic of France bestowed upon him the Croix de Guerre with Silver Stars in appreciation of his achievements in re-establishing civilian health and medical services in war-torn areas. He was released from service on January 11, 1946, with the rank of Lieutenant Colonel. His professional memberships included: Fellow, American Medical Association; Fellow, American Public Health Association; American and Western Associations of Industrial Physicians and Surgeons; American Association for Advancement of Science; American Industrial Hygiene Association; American Conference of Governmental Industrial Hygienists; Southern California Industrial Safety Society. In several of these associations he served as an officer or on the executive committee. DR. NASATIR was widely known and well liked everywhere. For the high standards he set in his profession and for his personal qualities of kindliness, modesty, and consideration, DR. NASATIR will be deeply missed by his friends and associates.

American Conference of Governmental Industrial Hygienists, U.S. Public Health Service, Washington, D.C. J. J. BLOOMFIELD, Secy-Treas.
April 23-29, 1950, Chicago.

American Industrial Hygiene Association, 4400 Fifth Ave., Pittsburgh 13, Pa. HENRY F. SMYTH, JR., Executive Secy.
April 23-29, 1950, Chicago.

American Medical Association, Council on Industrial Health, 535 North Dearborn St., Chicago 10, Ill. CARL M. PETERSON, M.D, Secretary.

American Public Health Association, 1790 Broadway, New York 19, N. Y. REGINALD M. ATWATER, M.D., Executive Secretary.
November 8-12, 1949; Boston.

Association for the Surgery of Trauma.

Canadian Public Health Association, Vancouver, B.C., Canada.

Council on Industrial Health, American Medical Association; Secretary: CARL M. PETERSON, M.D., 535 N. Dearborn St., Chicago 10.

Industrial Hygiene Foundation of America, 4400 Fifth Ave., Pittsburgh 13, Pa. JOHN F. MCMAHON, Managing Director.
November 16-18; Pittsburgh.

International Association of Industrial Accident Boards & Commissions. MARSHALL DAWSON, U.S. Dept. of Labor, Washington, D.C., Secretary-Treasurer.
September 12-18; New York.

Lead Industries Association, 420 Lexington Ave., New York 17, N.Y. ROBERT L. ZIEGFELD, Secretary-Treasurer.
November 15-16; Chicago.

National Council on Rehabilitation; Secretary-Treasurer: MR. HOLLAND HUDSON, 1790 Broadway, New York 19.

National Metal Congress, Philadelphia.
October 25-28; Philadelphia.

National Rehabilitation Association, 411-7th Ave., Nashville 4, Tenn. LOUIS R. SCHUBERT.

National Safety Council, 20 North Wacker Drive, Chicago 6, Ill. NED H. DEARBORN, President; CARMEN FISH, Secretary.
October 18-22; Chicago.

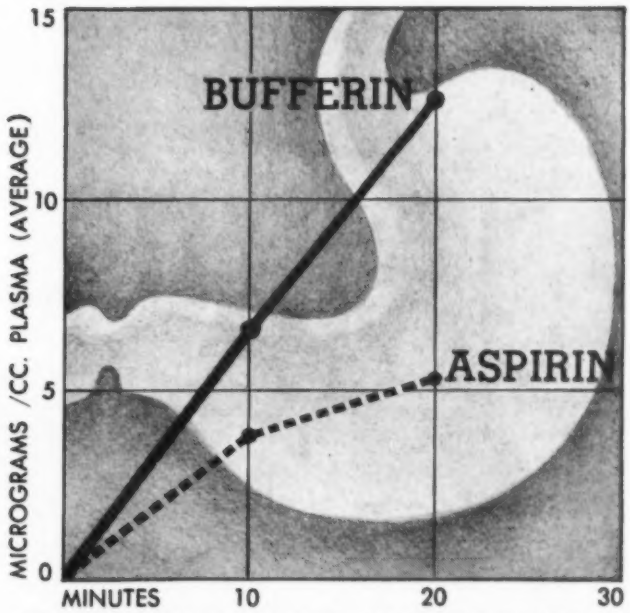
National Tuberculosis Association, 1790 Broadway, New York 19, N. Y. H. STUART WILLIS, Secretary.

Saranac Laboratory of Edward L. Trudean Foundation, 7 Church Street, Saranac Lake, N. Y. ARTHUR J. VORWALD, M.D., Director.

how

BUFFERIN

provides



COMPARISON OF BLOOD SALICYLATE LEVELS AFTER INGESTION OF ASPIRIN AND BUFFERIN

1 faster pain relief with

2 better gastric tolerance

BUFFERIN, the new Bristol-Myers antacid analgesic, gives quicker pain relief than aspirin because it is more rapidly absorbed into the blood stream. It takes aspirin more than 20 minutes to produce the blood salicylate levels that BUFFERIN gives in only 10 minutes. And BUFFERIN's 10 minute blood salicylate levels at least double themselves at the 20 minute mark.

BUFFERIN is better tolerated, particularly by patients who previously have experienced gastric distress from aspirin because each tablet combines 5 grains of acetylsalicylic acid with optimal proportions of magnesium carbonate and aluminum glycinate, effective antacid ingredients.

INDICATIONS:—For the quick relief of simple headaches, neuralgias, dysmenorrheas, muscular aches and pains, the discomfort of colds, and minor injuries. Particularly useful when gastric hyperacidity contributes to the symptom picture.

BUFFERIN

is available for your patients in vials of 12 and 36 tablets and in bottles of 100.

BUFFERIN is a trade-mark of the BRISTOL-MYERS Company.

A Product of **BRISTOL-MYERS** • **19 W. 50 St., New York 20, N. Y.**

For Rapid Disinfection of Instruments

CHLOROPHENYL

Affords a Valuable Instrument Disinfecting Medium for WARD and PROFESSIONAL OFFICE Use

This powerful disinfecting solution is free from phenol (carbolic acid) and mercurials. It is a chlorinated phenyl compound that is unusually effective in its rapid destruction of commonly encountered vegetative bacteria (except tubercle bacilli) as shown in the chart.

PRICE
Per Gallon . $5.00
Per Quart . $1.75

B-P instrument container No. 300 is recommended as the ideal office container for use with the Solution.

Check these additional features—

- Non-injurious to metallic instruments or keen surgical edges.
- Low volatility . . . will not irritate eyes, nose or throat.
- Will not stain fabrics, skin or tissue.
- Will not dry and fissure hands or skin areas if exposed repeatedly. (Chlorophenyl is not to be used therapeutically.)
- Stable . . . will retain potency over long periods.

Compare the killing time of this superior bactericidal agent

Vegetative Bacteria	50% Dried Blood	Without Blood
Staph. aureus	15 min.	2 min.
E. coli	15 min.	3 min.
Strept. hemolyticus	15 min.	15 sec.

Ask your dealer

PARKER, WHITE & HEYL, INC.
Danbury, Connecticut

A BARD-PARKER PRODUCT

NATIONAL DIABETES WEEK OCTOBER 10-16

launches the year-round Diabetes Detection Drive to find the million unknown diabetics in the United States and Canada.

Galatest

The simplest, fastest urine sugar test known

...already used by medical groups for Diabetes detection in 55 cities

Galatest is unsurpassed for mass screening tests for urine sugar. During the war it was used to make thousands of urine sugar tests daily at medical centers of the U. S. armed forces. It requires no special laboratory equipment—no test tubes—no boiling. Just one drop of urine—a little Galatest powder —gives color reaction immediately.
Galatest is approved by the American Diabetes Association for diabetes detection, and accepted for advertising by The Journal of the American Medical Association.

GALATEST IS READY

for the Diabetes Detection Drive

IN 2 WAYS

1. DOCTOR GUIDANCE

The regular vial of Galatest powder—sufficient for 100 tests—is ideally suited for testing under supervision by officially appointed doctors' committees—in detection centers, industrial medical departments, schools, laboratories, hospitals, and physicians' offices.

2. SELF-TESTING

The new Galatest Unipak—sufficient for 4 tests —for "self-testing-in-the-home" will be made available in drugstores in all areas where local medical groups have approved "self-testing-in-the-home" as part of the national diabetes detection program.

The Denver Chemical Mfg. Co., Inc., manufacturers of Galatest, and Galatest Unipak will cooperate fully with all local, state, or national groups in support of their programs for diabetes detection. Please let us know how we can cooperate with you.

The Denver Chemical Mfg. Co., Inc., 165 Varick St. New York 13, N. Y.

Adequate Breakfast AND FATIGUE DURING THE PRE-NOON HOUR

That the daily eating of adequate breakfasts lessens neuromuscular tremor during the pre-noon hour was recently shown in physiologic studies* conducted at the Departments of Physiology and Nutrition of a prominent medical college. As a direct consequence of the better nutritional state induced by improved breakfast habits, involuntary neuromuscular tremor is less during the last morning hour when 800 or 400 calorie breakfasts are the daily routine than when breakfasts are regularly omitted or coffee only constitutes breakfast.

Six young women graduate students were the experimental subjects in this carefully controlled scientific investigation. For permitting adequate physiologic adjustments to the four breakfast practices (800 calories, 400 calories, coffee only, and no breakfast), each practice was followed for a three-week period. The data obtained in the 800 calorie breakfast period were used as the standard base of reference.

Using specifically designed apparatus, the investigators determined the pattern of amplitude and rate of involuntary muscle tremor of the unsupported outstretched arm both before and after strenuous exercise. Measurements were made during pre-noon hours of the experimental periods.

Conclusions derived from this practically significant study follow:

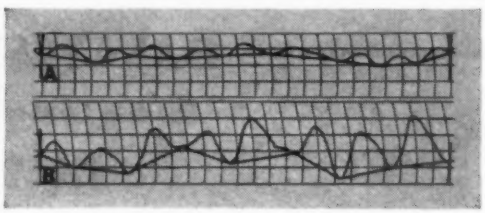
1. When no breakfast was the morning practice, the magnitude of muscle tremor substantially *increased*.

2. Habituation to coffee only for breakfast induced a similar *increase* in magnitude of muscle tremor.

3. Habituation to the 400 calorie breakfast after the coffee-only period markedly *decreased* the magnitude of muscle tremor; the tremor magnitude status tended to return to the status of the 800 calorie breakfast period.

The conditions of the study did not permit a direct comparison of the effects of the 800 and 400 calorie breakfasts on muscle tremor.

Health and nutrition authorities have long proclaimed the importance of daily adequate breakfasts in the promotion of good nutritional health. The results of this scientific study give direct experimental support to the soundness of such dictum.



Neuromuscular Tremor. Record of a normal tremor (A), and (B) exaggerated tremor. Subjects who are accustomed to eating breakfast have an exaggerated tremor when they suddenly begin to omit breakfast.

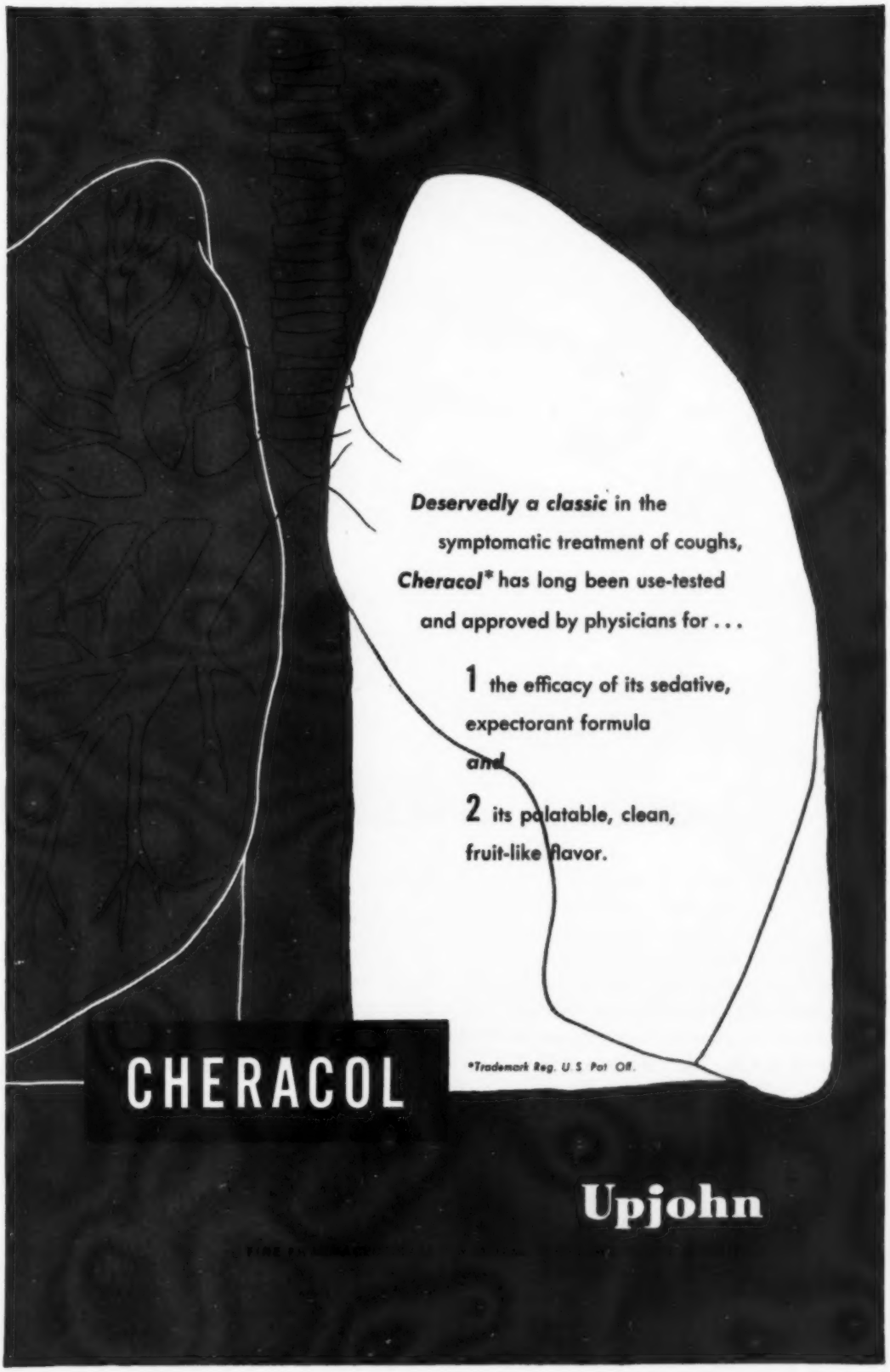
The presence of this seal indicates that all nutritional statements herein have been found acceptable by the Council on Foods and Nutrition of the American Medical Association.

*Reprint of the research study and findings will be sent on request.

CEREAL INSTITUTE, INC.

135 South La Salle Street · Chicago 3

A RESEARCH AND EDUCATIONAL ENDEAVOR DEVOTED TO THE BETTERMENT OF NATIONAL NUTRITION


Deservedly a classic in the
symptomatic treatment of coughs,
Cheracol* has long been use-tested
and approved by physicians for . . .
1 the efficacy of its sedative,
expectorant formula
and
2 its palatable, clean,
fruit-like flavor.
CHERACOL
*Trademark Reg. U. S. Pat. Off.
Upjohn

LATEST VITAMIN FACTS

From Merck—where many of the vitamin factors were first synthesized.

These six Merck *Vitamin Reviews* are yours for the asking while the editions last. These concise reviews contain up-to-date, authoritative facts and can be most useful for quick reference. Please address requests for copies to Merck & Co., Inc., Rahway, N. J.

PARTIAL INDEX OF CONTENTS

- **Factors that produce avitaminosis.**
- **Signs and symptoms of deficiency.**
- **Daily requirements and dosages.**
- **Distribution in foods.**
- **Methods of administration.**
- **Clinical use in specific conditions.**

MERCK VITAMINS

MERCK & CO., Inc. *Manufacturing Chemists* RAHWAY, N. J.

HIS WORK MAY LOOK LIKE THIS TO A WORKER IN NEED OF VISUAL CARE

Bettering the Workers' Vision is a Rewarding Experience for Doctor, Worker, Management

CORRECTED VISION CAN MAKE THE WORK LOOK LIKE THIS TO THE SAME WORKER

WITH the modern techniques and equipment now available the company medical director is offered an opportunity to combat successfully industrial visual inefficiency—a condition costly to employer and employee alike.

Studies have shown that there is a direct correlation between visual inefficiency, industrial accidents and spoilage in production. When vision is corrected there is a practically universal improvement in the quality and quantity of the work output. As for accidents, one company reduced its injuries 72% after a program of professionally supervised visual improvement was placed in effect.

Company medical directors who have written for AO's booklet "IMPROVED INDUSTRIAL VISION" have found that it not only confirms their own findings, but supplies helpful information when presenting the subject for management's action. Send for your free copy today. Address Dept. CP-8

American Optical

COMPANY

SAFETY PRODUCTS DIVISION

Southbridge, Massachusetts • Branches in Principal Cities

maintaining urinary antisepsis without distressing the patient

Comprehensive clinical evidence establishes that MANDELAMINE (methenamine mandelate) is effective against *Escherichia coli, Staphylococcus aureus* and *albus,* and certain streptococci. Comparative studies indicate its bacteriostatic and bactericidal effectiveness to be approximately the same as that of the sulfonamides or streptomycin.

Because MANDELAMINE therapy is exceptionally well tolerated, patients willingly adhere to the prescribed regimen.

DOSAGE: Adequate dosage is important; for maximum effect, adults should take 3 or 4 tablets t.i.d.; children in proportion.

Complete literature and samples sent to physicians on request.

6 outstanding features

- Has wide antibacterial range
- No supplementary acidification required (except when urea-splitting organisms occur)
- Little or no danger of drug-fastness
- Is exceptionally well tolerated
- Requires no dietary or fluid regulation
- Simplicity of regimen — 3 or 4 tablets t.i.d.

MANDELAMINE

REG U.S. PAT OFF

ACCEPTED COUNCIL ON PHARMACY AND CHEMISTRY AMERICAN MEDICAL ASSOCIATION

BRAND OF METHENAMINE MANDELATE

urinary antiseptic-council accepted

NEPERA

NEPERA CHEMICAL CO., INC.

Manufacturing Chemists

NEPERA PARK YONKERS 2, N. Y.

"The best inhaler they have ever used!"

the new S.K.F. BENZEDREX INHALER

So much better that we have discontinued 'Benzedrine' Inhaler

Physicians tell us that they and their patients find BENZEDREX INHALER the best inhaler they have ever used.

The active ingredient of BENZEDREX INHALER is 1-cyclohexyl-2-methylaminopropane, a new S.K.F. compound. It has exactly the same agreeable odor as Benzedrine*, gives even more effective and prolonged shrinkage, and does NOT produce excitation or wakefulness.

We are sure you will find that BENZEDREX INHALER is the best volatile vasoconstrictor you have ever used.

Smith, Kline & French Laboratories, Philadelphia

Each BENZEDREX INHALER is packed with 1-cyclohexyl-2-methylaminopropane, S.K.F., 250 mg.; and aromatics.

***'Benzedrine' (racemic amphetamine, S.K.F.) and 'Benzedrex' T.M. Reg. U.S. Pat. Off.**

For **INTENSIVE** *Vitamin Therapy*

In manifest vitamin deficiencies it is inadvisable and impractical to rely primarily on dietary correction. The deprivation of essential nutrient factors usually has existed for many years, and it is important to give adequate treatment in order to restore health promptly.

Pluraxin is especially designed for intensive vitamin therapy.

SPECIAL THERAPEUTIC FORMULA

Vitamin A (from fish liver oil)	25,000 U.S.P. Units
Vitamin B_1 (thiamine)	15 mg.
Vitamin B_2 (riboflavin)	10 mg.
Vitamin B_6 (pyridoxine)	2 mg.
Nicotinamide	150 mg.
Folic acid	5 mg.
Calcium pantothenate	10 mg.
Vitamin C (ascorbic acid)	150 mg.
Vitamin D_2 (calciferol)	1000 U.S.P. Units

Pluraxin®

WITH FOLIC ACID

High Potency – Therapeutic Formula – Multiple Vitamin Capsules

One capsule of Pluraxin daily is usually sufficient. Some patients may require larger doses during the early stages of treatment. In vitamin therapy, "it is far better to prescribe too much than too little, too soon rather than too late" (Spies). Available in bottles of 30 and 100 capsules; same formula also supplied without folic acid, in bottles of 30 and 100 capsules.

PLURAXIN, trademark reg. U.S. & Canada

WINTHROP-STEARNS

Winthrop-Stearns INC.

NEW YORK 13, N. Y. WINDSOR, ONT.

LETHAL BATH

. . . for bacteria

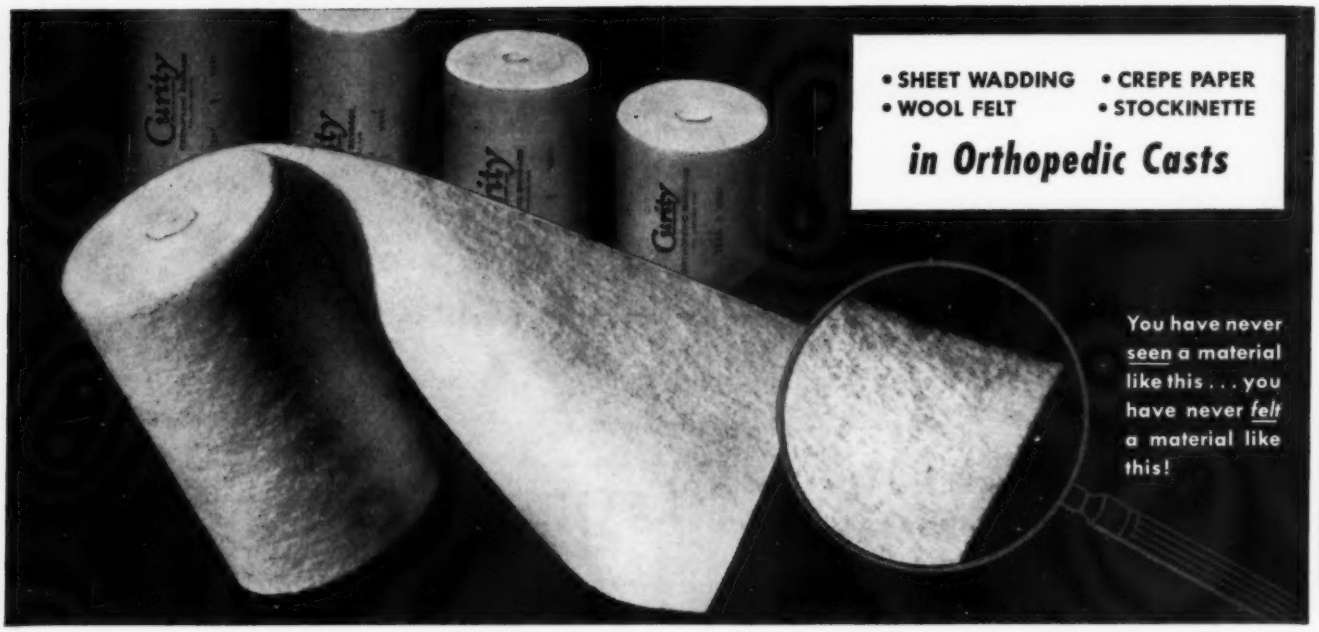
Quick, convenient and effective disinfection of instruments with a *cold* solution—that is what Metaphen Disinfecting Solution offers. In the absence of blood and exudate, common nonsporulating pathogenic bacteria (except tubercle bacilli) are killed in 10 minutes. Tests made against *Staphylococcus aureus* with samples of Metaphen Disinfecting Solution that had been in constant use under office conditions for one month showed that repeated immersion of contaminated instruments did not reduce the potency of the solution. Metaphen Disinfecting Solution is always ready for immediate use. It is stable, nonvolatile and nonirritating to skin and oral tissue. It does not injure temper, finish or cutting edges and does not leave a sticky coating on instruments. Ask your usual source of supply for time-saving Metaphen Disinfecting Solution. In economical 1-quart and 1-gallon bottles. ABBOTT LABORATORIES, NORTH CHICAGO, ILLINOIS

Metaphen®

DISINFECTING SOLUTION

[Contains Metaphen (Nitromersol, Abbott) 1:2500]

NOW! ONE NEW material replaces 4


• SHEET WADDING • CREPE PAPER
• WOOL FELT • STOCKINETTE
in Orthopedic Casts
You have never seen a material like this . . . you have never felt a material like this!

The First and Only True, Non-Woven, All-Cotton Felt

Curity ORTHOPEDIC BANDAGE

REG. U.S. PAT. OFF.

There is no other material like it! This revolutionary bandage material, a new non-woven, all-cotton felt long believed impossible to manufacture, is considered indispensable by surgeons who have used it experimentally. The fabric in this new bandage is an entirely *new material*—developed after years of testing and research by The Kendall Company.

MANY ADVANTAGES FOR USERS

1. **Strength**—holds together, wet or dry.
2. **Conformability**—adjusts to body contours, no wrinkling.
3. **"Cling" or Cohesiveness**—adheres to itself, cannot delaminate.
4. **Elasticity**—provides valuable support; not just bulk.
5. **Ease of Application**—simple, quick, lint-free.
6. **Smooth, yet Non-skid**—ideal surface over which to apply plaster.
7. **Durability**—does not wad or bunch up under cast.
8. **Absorbency**—skin condition is protected . . . does away with many skin problems.
9. **Porous**—feels snug, yet "live"—air can circulate.
10. **Easy to Cut**—cast removal is an easy, clean job.
11. **Non-shrinkage**—does not get tighter after moistening.
12. **No Waste**—odd lengths can be used for padding, stay where placed.

Time and Moneysaving Uses:

- rectal dressings
- eye pads
- colostomy care
- fluffs
- bandaging
- sponging
- vaseline dressings
- many other uses in Out-Patient and Emergency Departments

Ask Your Curity Representative To Demonstrate . . .

A product of

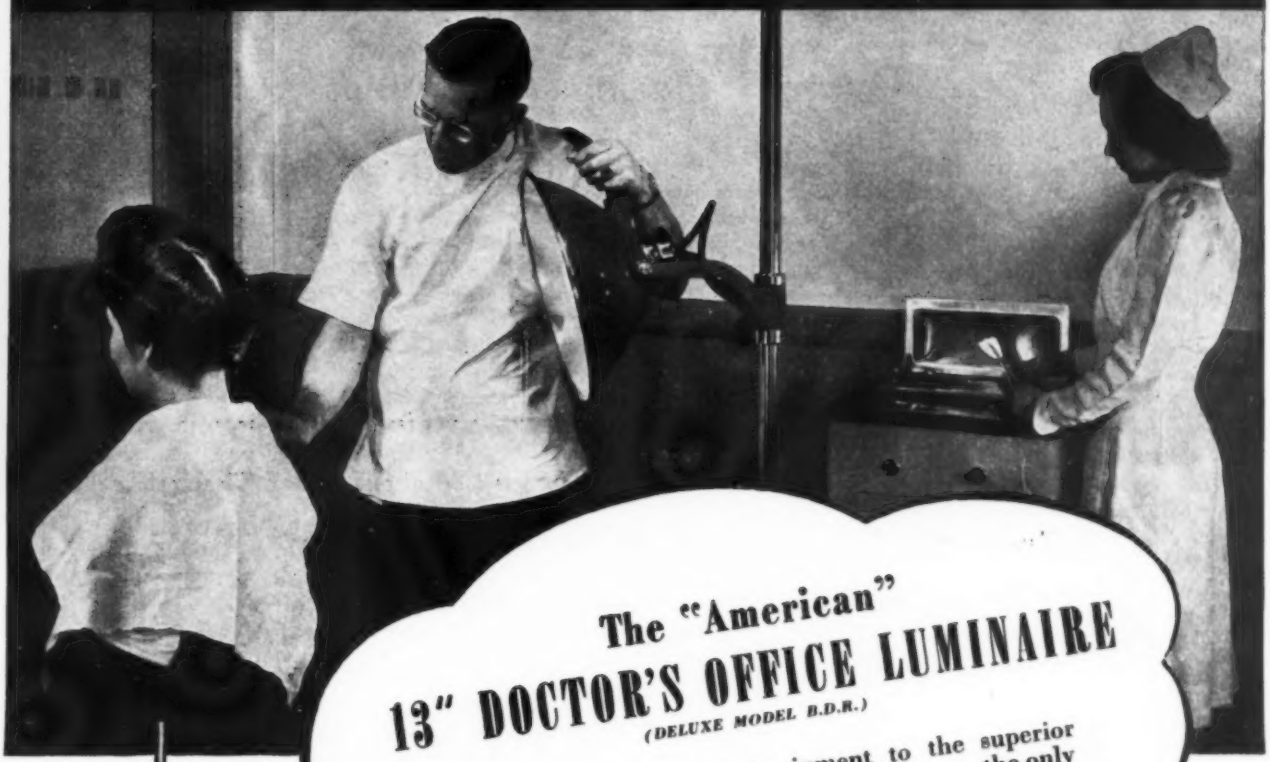
BAUER & BLACK

Division of The Kendall Company, Chicago 16

RESEARCH TO IMPROVE TECHNIC...TO REDUCE COST

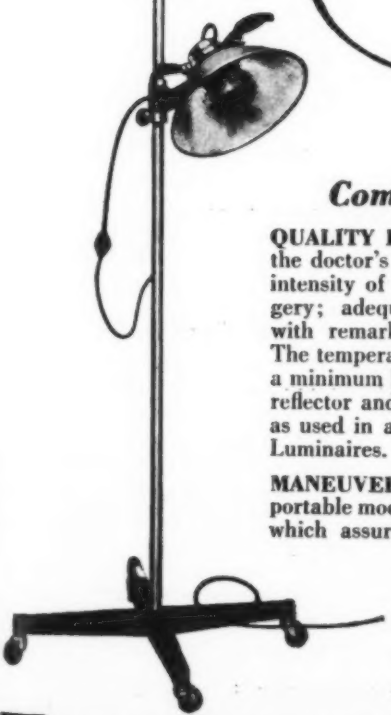
Curity
REG. U.S. PAT. OFF.

Brilliant Illumination on Low Wattage
...with fingertip control



The "American"
13" DOCTOR'S OFFICE LUMINAIRE
(DELUXE MODEL B.D.R.)

a logical companion equipment to the superior "American" Small Instrument Sterilizer . . . the only such sterilizer providing burn-out-proof protection.



Compare These Essential Requisites—

QUALITY ILLUMINATION . . . Provides the doctor's office or examining room with intensity of illumination found in the surgery; adequate volume, color corrected, with remarkable freedom from shadows. The temperature of the beam is reduced to a minimum by a heat control cylinder. The reflector and door glass are the same type as used in all "American" Major Surgical Luminaires.

MANEUVERABILITY . . . This superior portable model has four ball bearing casters which assure stability and free mobility. The light head has a vertical adjustment range from 36" to 72" from the floor level, and a horizontal adjustment for any desired angle.

ADAPTABILITY . . . Note the minimum overhang of light head from upright standard which makes the unit adaptable for use in either large or small offices without sacrificing positioning range of light beam.

EFFICIENCY . . . Produced 2000 Foot-Candles, operating on 100 watt, 115 volts, with P25 Base up Burning Spotlight Lamp.

WRITE TODAY for further information

AMERICAN STERILIZER COMPANY
Erie, Pennsylvania

DESIGNERS AND MANUFACTURERS OF SURGICAL STERILIZERS, TABLES AND LIGHTS

supply that meets demand

Normal levels of all the important fat and water-soluble vitamins
are restored by the administration of one Gelseal 'Theracebrin'
(Pan-Vitamins, Therapeutic, Lilly) twice daily for a week or ten days.
Chronic deficiency states require treatment for much longer periods.

→ *gelseals* **THERACEBRIN**

are particularly applicable
in many urgent situations such as arise
with the preoperative and postoperative patient and in the medical care
of severe injuries, burns, hemorrhage, and infections.
Whatever the individual patient's need may be for one or several of the essential vitamins,
the proper dosage of Gelseals 'Theracebrin' will satisfy the requirement.

ELI LILLY AND COMPANY • INDIANAPOLIS 6, INDIANA, U.S.A.

INDUSTRIAL MEDICINE AND SURGERY

Volume 18 OCTOBER 1949 *Number 10*

Nutrition Course for Employees' Wives

GRADIE R. ROWNTREE, M.D.,
Medical Director, C. T. Dearing Printing Company,
Louisville, Kentucky

ON JANUARY 1, 1948, a Medical Department was established at the C. T. Dearing Printing Company, with the purpose not only to provide emergency medical care for the employees, but also to extend to them a complete preventive medical service.

While the new Medical Department was still in its infancy, several projects for improving the health, morale and welfare of the workers in the plant were initiated. One such concerned itself with nutrition. Local nutritionists were invited to study the diets of the workers, and, after checking a cross section of the employees, it was found that their diets could be improved. As a result, a nutrition program for the plant was decided upon.

The first step in this nutrition program was a visit to the box-lunch company, which provided lunches to the majority of the employees. Suggestions were made to include more whole-grain bread, fruit, raw vegetables, and lettuce or tomato added to sandwiches, to improve the mineral and vitamin content of the lunches. These suggestions were accepted and carried out by the box-lunch company.

Since the wives are all-important in planning meals at home, the next step was to organize a class in guidance to right food selection for the wives of the employees. It was thought that such a course would pay dividends in better nourished workers and improved output in the plant. Nutritionists have long believed that proper food for workers reduces absenteeism and lowers the accident rate. To make plans for the class, a committee of representatives from all the departments in the plant was formed to work with the Medical Department and the nutritionist. The committee formulated a questionnaire which was sent to the wives of the employees. Among the questions were: "Would you be interested in attending a series of discussions, demonstrations, and movies, on low-cost dishes; child feeding; how to plan menus; how to select foods that are especially good for maintaining health; how to do marketing to advantage; what foods can be substituted for meat; where to get new recipes; what are some of the quick tricks and short cuts in producing appetizing, nourishing meals; and last, but not least, what are some of the new reducing diets?" Interest in how to put more weight on thin members of the family was stimulated too. It was also asked whether or not the wives wished recipes and menu-planning to appear in the employees' magazine. Each recipient of a questionnaire was requested to check at which time of day she would prefer to attend meetings—morning or afternoon. A choice of meeting place was offered, and each employee's wife was asked to list any topics, under the general head of nutrition, she would like to have brought up for discussion. For ease in answering the questions, only check marks were required after the various items. A letter of explanation, from the president of the company, accompanied each questionnaire mailed out.

It was found that the wives were especially interested in low-cost dishes, planning menus, child feeding, meat substitutes, reducing and gaining, marketing, and new recipes. Interest was indicated also in a sewing class, first aid, home nursing, information on special diets, canning, and budgets. Nearly all wished to have articles on recipes and menu-planning in the employees' magazine.

It was so well demonstrated that the employees' wives would be responsive to such a program that a meeting room in one of the leading hotels was engaged for the nutrition classes. These started in early January, with an attendance of about 100 employee-wives. Classes were conducted one day each week for six weeks. The instruction given in the morning class was repeated in the afternoon. This made it convenient for wives to attend either part of the day. A separate class was held for the wives of Negro employees. This group met at the Y.W. C.A., a central location where they are accustomed to meeting. Classes for the colored group were practically the same as for the white, except that one class was taught by a prominent Negro physician.

The Medical Department personnel and the Director of the Central Dairy Council arranged the course. All agreed that community resources should be utilized in putting on the program. Representatives of the state and local Boards of Health, the State University and the local Red Cross, readily agreed to participate.

The following program was arranged for the six sessions:

1. "Menu Planning"—Director, Central Dairy Council.
2. "Party Fare for the Family"—Nutritionist, American Red Cross.
3. "Marketing Hints"—Marketing Expert, University of Kentucky.

4. "Infant and Pre-school Health"—Director, Division of School Health, Louisville and Jefferson County Health Department.

5. "Reducing and Gaining" (a talk, supplemented by a film, "Whenever You Eat")—Director, Central Dairy Council.

6. "Suggestions for Reducing Food Costs"—Nutritionist, State Department of Health.

The president of the company attended the opening session for the white and the colored groups. His informal welcome was received with enthusiasm and did much to strengthen the employer-employee relationship, which is indispensable in any industry.

Many wives had said they would like to attend the classes but they had small children whom they could not leave. This situation proved no problem at all, owing to the generous response of a registered nurse—the wife of one of the company employees. She volunteered her services to care for the children, and it was arranged that the mothers bring them to the hotel, either mornings or afternoons, on class days. The company provided toys for the youngsters' entertainment, and the arrangement was a great success.

Wives showed keen interest by taking recipes and meal-planning guides home. They made notes on low-cost dishes, on reducing or gaining diets, depending on their special needs, and on care and feeding of children. "How to pack more attractive and appetizing lunches," was of special interest to all. Since different personalities from the various community agencies presented each lesson, enthusiasm was continuously maintained and attendance was excellent right through to the closing session.

In March, a survey was made and it was found that 62% of the employees were favorably impressed with the nutrition course and its results. Their comments to the effect that their own meals at home had improved, testified to the value of the course. A reduction in accidents and absenteeism has been shown in the plant for some months. While many factors are involved in this reduction, improved nutrition of the worker is no doubt playing its part.

A continuing feature of the nutrition program in the plant is a three-dimensional exhibit placed in the plant lobby and changed monthly. This exhibit, plus information on nutrition in the employees' magazine, consistently stresses the value of well-chosen meals.

The class for employees' wives attracted favorable attention in the community, through articles in the local newspapers describing its aims, objectives, and accomplishments. And the project as a whole demonstrated the value of industry's use of community resources. It served, too, to knit the company and its employees more closely together. It was not a project of great magnitude, nor was it expensive, but we feel that it was far-reaching in the good it accomplished.

Sound Counsel

THE INITIAL cost and subsequent maintenance expense of a program are management's chief concern when any new program is inaugurated. It is practically impossible to keep medical costs within anticipated limits. Factors explaining this rise in cost may be set forth as follows: (a) government regulations—demands of labor; (b) needs of the company from a work-efficiency point of view; (c) the desires of a competent staff to practice medicine according to accepted modern standards. Generally speaking, it is much better to begin with a minimum medical program. Then, after the nucleus has been properly organized, you can expand the policy and personnel simultaneously. The moral of this is, GET GOOD BEFORE YOU GET BIG.

—From "Medical Problems of the Oil Industry in the Tropics," by ROBERT COLLIER PAGE, M.D., in *The Medical Bulletin*, August, 1949.

Solubility and the Relative Toxicity of Lead Chromate II

G. C. HARROLD, Ph. D. — S. F. MEEK, M.D.,
Industrial Health, Hygiene and Safety Service,
Detroit, Michigan

IN A PREVIOUS study,[1] we provided evidence that lead chromate inhaled or ingested by human subjects did not exhibit clinical or laboratory findings indicative of lead absorption after exposure to quantities of lead chromate greatly in excess of those regarded as safe for continuous exposure. That study involving two groups of 145 men and 40 men for 16 months was extended to 28 months for 20 men who were still exposed to high concentrations based on an exposure day.

We will, in this report, extend the observations to 40 months for 26 men. The information is evaluated in terms of the solubility relations of lead salts in human lung fluids.[2]

1. Exposure to $PbCrO_4$

IN OUR previous report on the toxicity of lead chromate,[1] we evaluated the actual exposure of two groups totaling 185 men to amounts of lead in the form of lead chromate, never less than 4.0 mg. of $PbCrO_4$ per exposure day for 18 months, and to over 18 mg. $PbCrO_4$ per exposure day for from 12 to 15 months, with no clinical or laboratory symptoms of lead absorption. From the above group, 26 men were selected on the basis of continuous exposure to the highest concentrations of lead chromate. They had exposure days averaging 6.2 mg. of Pb chromate for 27 additional months. The reports showed no laboratory or clinical results differing from the normal.

This group of 26 men had exposure days of over 18.3 mg. lead chromate per day for 13 months, and to 6.2 mg. lead chromate per day for 27 additional months. The highest exposure day was 12.2 mg. and the lowest was 2.6 mg. in this 27-month period. The men on the job cooperated by wearing the test collecting devices. At the end of 40 months, the group Basophilic Aggregation was .7 and the lead-in-urine average .039 mg. per liter. Again, no clinical or laboratory results deviating from the normal were found.

The above extension of the test results of the group, whose only selection was on a basis of continuous exposure to high quantities of lead chromate, indicates that over long periods of time, such exposure does not cause demonstrable ill effects.

In view of Silverman and Drinker's[3] questions about physiological breathing rates, our last results for a period of 15 months with this group of 26 men were derived mainly from the exposure days of the men on the job. All the men cooperated to some extent, and no significant deviations were noted from those results which had previously been extended from a limited number of men. These tests were not taken every day, but some values were obtained every two weeks from different individuals. The individual differences which did appear were not important to the general average over a long period of time. The actual exposure time of no worker was reduced for more than two weeks over the total exposure time by the wearing of test equipment.

Efficiency of Packed Tube Collector

THE efficiency of the "packed tube collector"[1] was checked at 28 and 40 liters airflow per minute using an electrical precipitator in a series. Three determinations averaged 99.7% relative efficiency at 28 liters per minute, and three determinations at 40 liters airflow averaged 99.8% relative efficiency. The lead test material was sprayed lead chromate in concentrations of 120 to 150 milligrams of lead chromate per 10 cubic meters of air as determined by the electrical precipitator.

Air Lead Concentrations per Ten Cubic Meters

HOWEVER, the concentrations that this group of 26 men were exposed to based on the amounts of lead chromate per 10 cubic meters of air using the electrical precipitator and the midget impinger as sampling equipment were much higher. The averages comprise 328 individual air tests for the first 13-month period, and 628 separate air determinations for the 27-month period. For 13 months, the exposure average was 117.1 mg. of lead chromate for 10 cubic meters of air. For the following 27 months, the average was 41.3 mg. of lead chromate per 10 cubic meters of air. The lowest values found in one area where two of the men were working averaged 12.1 mg. of lead chromate per 10 cubic meters of air for the last six months' exposure period.

An outside agency checking one of the work places where some of these 26 men had worked for over 15 months reported lead-in-air values of 74, 105, 118 and 121 mg. of lead per 10 cubic meters of air using the electrical precipitator as the collecting instrument.

Since such methods of standards reporting, based on the air content of contaminant per 10 cubic meters of air, are commonly employed, it can be seen that some explanation is required as it is determinable that lead absorption of lead compounds such as lead oxide, when reported in much smaller concentrations, has caused lead absorption.

Thus, our correlations[4] between lead-in-urine and Basophilic Aggregation were good when lead oxide was involved. Furthermore, our first lead chromate report[1] cites the excellent agreement between Basophilic Aggregation, lead-in-urine, and lead content of the air when coarse *lead oxide*

is involved. We have additional information supporting this point. Two hundred and one (201) men exposed to concentrations of lead-in-air averaging 1.24 mg. of lead per 10 cubic meters had a Basophilic Aggregation average of .9, and the lead-in-urine average was .081 mg. per liter of urine.

Other investigators[5,6] have somewhat similar data which refer in the main to soluble lead compounds—compounds readily soluble in bodily fluids.

We have found that when lead chromate[1] was involved, this correlation was not evident. There is a correlation between the Basophilic Aggregation and the lead-in-urine, but none with the amounts of lead-in-air.

Hypothesis

OUR WORK[2] on the solubility of lead salts in human pleural fluid shows that lead oxide and lead carbonate are much more readily soluble in human lung fluid than lead chromate and lead titanate. This fact, when isolated from the actual concentrations, is only important in that it allows a prediction that the more soluble salt will probably cause signs of lead absorption to appear more rapidly than in the case of the less soluble salts.

However, we believe the quantitative evaluation of the amounts of impure lead chromate in human pleural fluid[2] indicates a possible explanation of the lack of harm due to very large quantities of inhaled lead chromate. It has been suggested that the synthetic coating on the lead chromate paint would prevent the dissolving of the lead compound in the human organism, but this is not a noticeable deterrent to lead intoxication when paints containing lead oxide, lead sulphate, or even lead carbonate are sprayed.

Furthermore, we did *not* use a coated lead chromate in our solubility determination.

These quantities had not been reported in the literature for the solubility of the lead oxide, lead carbonate, lead chromate, and lead titanate in human pleural fluid or blood serum prior to our recent paper.[2] We are now suggesting a possible explanation which has been offered freely in the past based on generalized information or belief. We now have scientific data to substantiate these beliefs.

We propose an explanation based on the extremely low solubility of lead chromate in human pleural fluid and blood serum. The amounts found soluble in one liter of these fluids range from 1.28 mg. $PbCrO_4$ in pleural fluid to 1.14 mg. $PbCrO_4$ in blood serum. Since the total amount of tissue fluid which could act as an exchange medium between the lung and the blood is limited, a saturation of this limited quantity of fluid would provide total quantities of lead ion less than 1.0 mg. This quantity of lead is subject to a continuous unbalanced equilibrium with the blood, and finally with the kidney and the excretory product, the urine. The maintenance of saturation of these fluids would require, according to the laws of mass action, very large quantities of the less soluble lead chromate in the lung. When it is considered that usually, but not always, no clinical symptoms are observed when .2 to .3 mg. of lead are found in a liter of the urine and amounts of .05 to .1 mg. of lead per 100 grams of whole blood, the possibilities of getting even .5 of a milligram of lead in the body fluids from a quantity of lead chromate of 1.0 mg. per liter of body fluid concentration is remote in even exceptional industrial exposures.

This information may appear more significant if we point out that .05 mg. to .1 mg. of lead per 100 grams of whole blood is close to .5 to 1.0 mg. of lead *per liter* of blood. We, therefore, are comparing .2 to .3 mg. lead in the excretory product, the urine, to .5 to 1. mg. of blood lead in the same volumes of fluids to a compound which dissolves in blood serum in the range of 1.14 mg. per liter.

Actually, our measurements of 26 men exposed to at least 6.2 mg. of lead chromate for over 40 months, and for a large portion of the time to from 15 to 20 mg. per day, showed that this saturation was not only not reached, but that the lead-in-urine and Basophilic Aggregation dropped to normal during a period of time when the exposure day indicated an inhalation of 6.2 mg. of lead chromate. Furthermore, for 13 months of exposure to over 18 milligrams of lead chromate, no significant deviations were noted from the results observed at the end of one month's exposure.

Based on these observations, we suggest that the insoluble lead salts which prove to have solubilities in the range of 1 milligram or less in human lung fluid at about 37° C will not be likely to be causative of lead intoxication from inhalation in quantities of less than 20 milligrams of insoluble lead compound per 10 cubic meters of air. We do not propose this as a standard of the M.A.C. variety, but we do suggest that it is a fact based on scientific observation.

It is our observation that even this figure may be extended considerably if more insoluble lead salts are considered. Thus, with purified lead titanate where the solubility is about .28 mg. $PbTiO_3$ per liter of blood serum, we may be approaching a range where a true equilibrium exists between the amounts of lead absorbable through inhalation and the amounts excreted without harm to the human organism. This relation would not obtain with impure lead titanate containing lead salts readily soluble in body fluids. It is believed that any lead intoxications which may occur in a lead salt of this level of solubility would be due to the admixture, or formation, of a more soluble lead compound.

Solubility, Particle Size and Excretory Rates

OUR STUDY of workers exposed to lead chromate[1] has led to the question as to whether or not somewhat higher levels of urinary excretion than that of the general population can be maintained without the demonstration of clinical symptoms.

In the cases of over 100 men exposed to large quantities of lead chromate, the urinary lead excretory rate rose to .1 mg. per liter of urine and remained above .06 mg. per liter of urine for 18 months with no demonstrable damage. Certainly there must be some regulatory mechanism to adapt the organism to changed conditions. In a previous study,[4] we were able to show that the average individual in an industrial environment, exposed to more lead than the normal population, *did* have a somewhat higher lead excretory rate of .05 mg. per liter of urine than had been reported for the general population.[7] This indication has been supported by Dreessen[8] in his study on lead storage battery workers not exposed industrially to lead, whose urine contained .06 mg. of lead per liter.

That this rate is in equilibrium with the exposure is shown by the return to completely normal industrial levels, both for lead-in-urine and for Basophilic Aggregation test, even though exposed to over 6 mg. of lead chromate when in the air of the work place, and over a longer period of time, the lead-in-urine concentration and Basophilic Aggregation percentage approach the normal values given for the general population.

Summary and Conclusion

WE DO NOT conclude that lead chromate cannot cause lead poisoning under certain conditions, but the evidence we have presented makes the appearance of lead intoxication from this source highly improbable in the industrial exposures which are likely to be encountered. This conclusion is based almost entirely on the solubility characteristics of this compound. In those instances where the amounts of lead compounds which can be dissolved in body fluids, are equal to, or less than, the amounts which are transported and eliminated without harm to the organism, the potential saturation limit is the important factor. The factor of solubility, in this instance, is independent of particle size and, perhaps, of other possible influencing factors, whereas lead compounds soluble to a great degree in body fluids are dependent on particle size, both in regard to the rate of solution and other factors such as the transport of extremely fine particles in protecting envelopes.

References

1. HARROLD, G. C., MEEK, S. F., COLLINS, G. R., and MARKELL, T. F.: Toxicity of Lead Chromate. *J. Ind. Hyg. & Tox.*, 26: 47, 1944.

2. HARROLD, G. C.: Solubility of Lead Salts in Human Pleural Fluid and Blood Serum. To be published in *J. Ind. Hyg. & Tox.* Presented Am. Ind. Hyg. meeting, April, 1949.

3. SILVERMAN, L. and DRINKER, P.: Use of the Exposed Worker as an Air Sampling Unit for Contaminants. *J. Ind. Hyg. & Tox.*, 27:22, 1945.

4. MEEK, S. F., COLLINS, G. R., and HARROLD, G. C.: Correlation Coefficient between basophilic Aggregation Test and Lead-in-Urine. *J. Ind. Hyg. & Tox.*, 22:401, 1940.

5. ELKINS, H. B., EGE, S. F., and RUOTOLO, B. P.: Evaluation of Lead Hazard. *J. Ind. Hyg. & Tox.*, 23:256, 1941.

6. SMUCKER, C. H., and KISTLER, J. B.: The Evaluation of the Lead Hazard in the Decorating Department of a Glass Plant. *J. Ind. Hyg. & Tox.*, 24:1, 1942.

7. KEHOE, R. A., THAMANN, F., and CHLOAK, J.: Normal Absorption and Excretion of Lead. *J.A.M.A.*, 104:90-92, 1935.

8. DREESEEN, W. C.: Health of Lead Exposed Storage Battery Workers. *J. Ind. Hyg. & Tox.*, 25:57, 1943.

"It Is The Nurse . . . ."

A SICK workman is a piece of humanity broken into bits. The physician picks up one to study it under his stethoscope, the bacteriologist wants another for his microscope, the psychologist a third one and so on. And each of them brings his own particular knowledge to bear on the particular bit, and draws particular inferences from it, sometimes right, sometimes wrong. But in the end it is the nurse who gathers up the various bits and reconstructs a whole from them with the virtue of her motherhood and the alchemy of her smile. While scientists keep busy sharpening their intellects in this or that particular direction the nurse enlarges her heart to include in it the whole of humanity. MCGRATH has said in her book "Nursing in Commerce and Industry" that industry needs a superior nurse. It is better if she had used the word religious in place of superior, for only such a nurse as lives religion in her life can be a superior one.

—From "Industrial Medicine: Its Religious Aspect," by H. P. DASTUR, Medical Officer, Industrial Medical Department, Tata Industries, Ltd., Bombay, in *J. Indian Med. A.*, 18:3, 279-281, May, 1949.

Preventive Medicine in Industry

S. M. HOCH, M.D.,
A. GIBSON, M.D.,
J. M. CARLISLE, M.D.,
Medical Division, Merck & Co., Inc.,
Rahway, New Jersey

THE TIME is long since past when the physician in industry could feel that he had discharged his responsibility to his employer and to the public by a simple pre-employment separation of the sheep from the goats. It has always been fallacious to act upon the assumption that any group of people can be arbitrarily divided into those unfit to work in industry and those who may safely be employed, and to assume that the latter group will remain in *status quo* until an arbitrary retirement age has been reached.

We all know that the physical and mental health of an individual varies from day to day within a wide range which we have chosen to call normal health, and that this state may gradually and imperceptibly change over a period of weeks, months, or years, into one which is definitely not normal and which prevents him from carrying out his duties and enjoying his recreations as he should. It is, therefore, obvious that any worthwhile program of health supervision and preventive medicine in the only constructive meaning of the term must be a continuous process.

The physician in industry cannot, of course, see every employee every day. He must gauge the frequency and character of examinations to some extent by the environment to which he knows the employee is exposed. He must also know the working environment in order to exercise adequate health supervision. Furthermore, he must take into consideration the age, sex, "previous condition of servitude," and, above all, the potentialities of the employee's physique and psyche to respond to unfavorable external and internal stresses. For example, even though the resting blood pressure may be normal on the initial examination, if it shows unusual lability on minor stress, greater care must be exercised in subsequent determinations of the vascular status since it has been amply demonstrated that such individuals are far more prone than the average to develop hypertensive cardiovascular disease. One could multiply examples of this sort pertaining to every feature of the individual's mental and physical make-up.

Placing and Keeping the Medically Handicapped

THE PROGRAM of medical examination and supervision described here has helped us in establishing standards for the hiring and placement of new employees and in maintaining a satisfactory health status in our personnel over a period of years.

This consists of two major procedures:

1. Case finding at the outset. The pre-employment examination often reveals defects which are not serious enough to preclude employment but may necessitate a modification of job requirements to meet the worker's capacity.

2. Periodic re-examination and revaluation. Good health of course is not static, and disorders may develop insidiously which can be discovered only by frequent and complete reviews of the employee's general state of health.

The way our program works can best be illustrated by the x-ray studies which form an essential part of the initial and subsequent examinations of employees. For example, Fig. 1 shows chest x-rays of four applicants who had no past history of serious illness or any current complaints. Two of these men had long worked as coal miners, and their roentgenograms showed

Fig. 1-a.

Fig. 1-b.

Fig. 1-c.

Fig. 1-d.

Fig. 2-a.

Fig. 2-b.

pneumoconiosis (Figs. 1-a and 1-b). The only jobs open to them required intermittent exposure to chemical irritants. Whether to employ them, therefore, depended not so much upon pre-existing abnormality of the lungs as upon their vital capacity and evidence of bronchitis, tuberculosis, or right heart disease. One of these men was rejected because of definite evidence of impaired vital capacity. The other, whose vital capacity seemed adequate, was employed and followed by subsequent x-ray examinations, which showed no evidence of pulmonary breakdown or aggravation.

X-ray films of the other two men (Figs. 1-c and 1-d) revealed calcific nodular deposits throughout both pulmonary fields, indicating previous widespread disease, though from the case histories given it appeared that neither had been aware of his condition. Both were employed and have worked as chemical operators under exposure to fumes capable of irritating the upper respiratory tract and often sufficiently concentrated to irritate the pulmonary parenchyma. They have had exemplary records and subsequent roentgenograms have shown no pulmonary changes.

Figs. 2-a-b-c show the films of a group of individuals with solitary lesions in the lungs which had great bearing on their employability, but which produced no physical signs and became apparent only through x-ray study.

In the first of these (Fig. 2-a) can be seen a clearly circumscribed oval area of increased density in the right lower mid-lung field. Such a shadow might, of course, represent different lesions, many of them serious, so that its evaluation had great importance, both for the individual and the Company. When the patient was informed of its importance, he obtained from his former post in the Navy an x-ray taken five years previously. This presented the same picture, which evidently had existed for five years without change. Since there was no evidence of a primary neoplastic lesion, and repeated sputum and sedimentation rates performed in the Company had all been negative, it was felt that this man might be hired with the proviso that he be kept under periodic study and supervision.

Figs. 2-b and 2-c represent a similar case in which the pre-placement x-ray examination on an asymptomatic individual demonstrated a small

Fig. 2-c.

Fig. 3-a.

Fig. 3-b.

Fig. 3-c.

Fig. 3-d.

distinct nodular area in the second interspace anteriorly, overlapping the inferior border of the second rib in the left upper lung field. This individual was essentially normal on physical examination and had a negative sputum and normal sedimentation rate. When informed of our concern over the x-ray appearance of his chest, he managed to obtain for us a film taken a few years earlier while he was in the armed services overseas. This film demonstrated an essentially similar appearance, and on the basis of comparison this man was hired. He has been followed periodically and is now making a very good record in our Company.

We do not mean to imply that there is no risk in hiring persons with such lesions. The next case (Fig. 3) illustrates this point. However, the risk can be minimized by cooperation with the patient and his own physician. This young man presented himself to the Plant Health Department without physical or laboratory evidence of disease. In the left mid-lung field (Fig. 3-a) there is a large circular area having a number of highlights within it. Because of the size of this lesion, our immediate reaction was to reject the man. On being so informed, he went to see his physician—a prominent internist in the area—who immediately sent us films dating back five years before the present examination (Fig. 3-b). On a routine check-up of this boy at that time, when he was completely free of complaints, the lesion had been discovered and the patient had been given a complete work-up, including bronchoscopy and an attempt at needle aspiration. No specific diagnosis had been arrived at, and the patient had been carefully followed for a period of five years. A whole series of films had revealed no change, and the internist felt that this boy might be suitable for the type of work open, which was clerical. It was finally agreed that the boy would be taken, with the understanding that he receive monthly check-ups from his physician as well as from us. All went well for several months, when he became ill. He was absent for six weeks and returned with a note from his physician stating that he had recuperated from a virus pneumonia and was in condition to return to work. X-ray taken here at that time (Figs. 3-c and 3-d) revealed coalescence of the highlights in the mass, and throughout the left lower lobe.

Fig. 4-a.

Fig. 4-b.

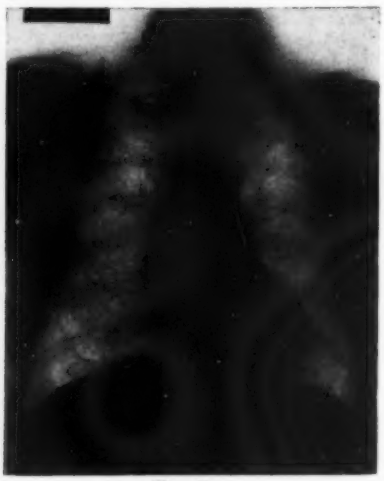


Fig. 5-a.

Fig. 5-b.

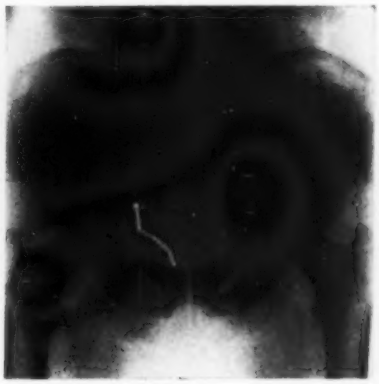


Fig. 5-c.

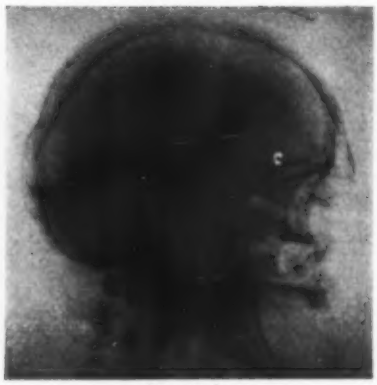


Fig. 5-d.

The sputum also was positive for tubercle bacilli. The importance of supervision of patients with static defects is here emphasized.

THE next group of cases will, perhaps, even more clearly demonstrate the importance of the follow-up examinations and studies.

Fig. 4-a shows the chest film of a patient hired in 1941. It reveals a very small area in the second interspace in the mid-axillary line of the right lung, which apparently was missed at that time. The patient worked here for some months without any complaints. He left before the year was completed and took a job in West Virginia; then, after working there for six years, he returned to our plant. Films taken on his return revealed a small calcification at the site of what was now recognized as having been a suspicious lesion back in 1941. The remainder of the film was negative, and the patient was re-hired without comment. One year to the day following his re-employment, he appeared at the Plant Health Department because of hemoptysis. An x-ray (Fig. 4-b) at this time revealed a soft infiltrate located in the second and third interspaces of the right lung field below the calcific area previously described. He was reported to his private physician as a suspected case of active tuberculosis. His physician transferred him to a nearby sanitarium, where the diagnosis was acceded to, and a pneumothorax was begun immediately on an ambulatory basis. The man came back to our health department requesting re-employment at light work. Before completing our pre-placement examinations, we sent him to a consultant specialist, who found him to be negative to progressively increased quantities of tuberculin, but markedly positive to histoplasmin. We then referred the patient back to his physician with this information. The pneumothorax was allowed to re-expand. The lesion cleared completely in three weeks, and the patient was permitted to return to work. We have continued to follow him periodically, and he has made an excellent employee.

In this case we can emphasize the value of the previous x-ray, since it was of enormous importance as a means of comparison and in determining the progression of the disease. This history also demonstrates the close cooperation which must exist between the plant physician and the family physician, and that the responsibility of the plant physician cannot be diminished by the work-up and supervision of patients while they are away from their place of employment.

Fig. 5-a shows the film of an old and respected employee of this Company who has worked as a chemical operator for many years. When he was first hired, complete pre-placement examinations were not customary but, as soon as they became routine, the film shown here was taken. Increased markings were sufficient to arouse comment, but not until his next periodic examination was it noted that the left clavicle was distinctly wider than the right, and that this difference could not be explained simply on the basis of rotation. An increased sclerosis of the left clavicle with decreased contrast between cortex and medulla also seemed suspicious. This led us to x-ray the man's skull and pelvis, which resulted in the discovery of Paget's disease. This information was passed on to his physician, who had him hospitalized for a complete work-up. The presence of this disease had never been suspected before our periodic examinations were instituted. It has not stopped this employee from continuing his work, however, and performing it excellently.

A young woman, when first employed about six years ago, had little in her film except a suspicious area in the left upper lung field apparently extending from the hilus (Fig. 6-a). All other findings in the laboratory and physical examinations being negative, the patient was employed. She was re-checked in five months and no change was noted in the region. The patient had absolutely no complaints and was slated for a complete examination, which, through an administrative error in her particular case, was missed, and she was not examined until four years later. At this time, she had moderate symptoms, and though she had been seen by her physician for vague non-specific complaints, the cause of her disease was not found until the x-ray at her periodic examination revealed the lesion (Fig. 6-b).

Fig. 6-a.

Fig. 6-b.

Fig. 7-a.

When the young woman represented in Fig. 7-a was hired for a clerical position, she gave a history of tuberculosis five years previously, which had been treated by prolonged bed rest and checked up periodically by her physician. Physical study at this time revealed nothing. X-ray showed evidence of a healed acid-fast disease above the line of the first interspace bilaterally. This girl was accepted for employment and followed by periodic examinations for four years by her physician and also by our Plant Health Department. In her fourth year, she suddenly had a spread. We obtained the film (Fig. 7-b) demonstrating the extent of the lesion on the right side. She was immediately placed in a sanatorium by her physician. Pneumothorax was instituted and maintained for two years. The patient was then returned to our Company while she still had pneumothorax, but had been ambulatory for six months. In the next four years, she has continued in her secretarial work and has made an exemplary record. Pneumothorax has long since been abandoned. The present film (Fig. 7-c) shows marked extensive healing. She is still followed, and is a valuable employee.

It is, of course, true that positions cannot be kept open indefinitely in such cases, but we should like to emphasize that, when work is available, the presence of a pre-existing disease does not contra-indicate re-employment of the afflicted person.

Fig. 8-a shows the chest roentgenogram of a young man which was taken when he first came to work with the Company. It was completely negative, as were his history and physical examination. Some years later, when he had been suffering from a chronic pharyngitis which had not been cleared up by outside treatment, he came to the Plant Health Department. Physical examination then revealed a generalized adenopathy. X-ray (Fig. 8-b) demonstrated a widening of the mediastinum, plus a shadow in the right lower lung field which was felt to be an atelectasis of the right middle lobe. The case was discussed with outside medical consultants. Biopsy gave a diagnosis of Hodgkin's disease. The patient was treated first with nitrogen mustard, later with x-ray therapy. He continued working until within a few months of his death, during which time periodic x-rays (Fig. 8-c)

Fig. 7-b.

Fig. 7-c.

Fig. 8-a.

Fig. 8-b.

Fig. 8-c.

Fig. 9.

showed gradual and steady extension of the disease.

In Fig. 9 is seen a somewhat less somber case. This little man was hired during the war as a porter. He had no complaints, and although his heart was somewhat enlarged it seemed to be fairly well compensated. Certain restrictions were placed on the activity permitted him at his job. He was sent with a note to his own physician, and was thereafter followed for the next few years. During that time, he showed progressive cardiac enlargement and gradually increasing decompensation, but he retired from the employ of the company still accomplishing the tasks for which he was hired.

The next case is that of a young man who was employed in a minor executive capacity. When hired, his examination was essentially negative and his chest x-ray within normal limits. It was on a subsequent physical examination that a testicular enlargement was noted. This was called to the attention of his physician and, on removal, proved to be a neoplasm. This finding made it necessary for the Plant Health Department to inform management that the future of this man was very doubtful, that they should be prepared to replace him relatively soon, and that his elevation to positions of responsibility carried definite risk. He was followed by periodic films taken in the Plant Health Department. Approximately two years later the first metastasis was noted in his lungs (Fig. 10-a) and subsequent rapid increases in these areas were followed by serial films (Figs. 10-b-c-d). It is of interest that this man was able to work until four months before his death.

Fig. 11-a shows a negative chest x-ray, taken when the man was employed. His physical examination also was negative. A short time later, during a domestic squabble, he was stabbed in the left anterior chest, with apparent severing of a branch of the internal mammary artery but without any evidence that the pericardium had been pierced. The puncture wound was extremely small, and the man reported for work without having had any medical care. Only the insistence of the Plant Health Department sent him immediately to his own physician. He was hospitalized and operated upon, and a huge blood clot covering the entire chest wall was discovered.

Fig. 10-a.

Fig. 10-b.

Fig. 10-c.

Fig. 10-d.

Fig. 11-a.

Fig. 11-b.

He subsequently was returned to work with a statement that he was competent to perform his activities as an operator in the factory. Examination at this time revealed a definite increase in the size of his heart and also some evidence of increased venous pressure. Our Plant Health Department was unwilling to allow him to return to work, and the matter was discussed at considerable length with the patient's surgeon. It was finally decided to let him return, with the understanding that we should check him periodically at short intervals. Our check-ups indicated continued increase in the size of the heart (Fig. 11-b) and upon our insistence a complete re-study of the case was made. The outside medical men reported that a pericardial tap had resulted in the evacuation of a large quantity of fluid, which was sterile, with resultant clinical improvement and dimunition in the cardiac outline by x-ray. After another period of convalescence, the patient was again returned to us with a statement affirming his ability to accomplish the duties of his job. Examination three months later revealed fluid in the right pleural space (Fig. 11-c) and then a complete study in the department produced evidence of increased venous pressure and a diminished cardiac reserve. The man was informed that a progressive condition was present and that he could not be permitted to return to work until satisfactory evidence of complete regression was presented to us. He was then re-hospitalized, and we lost track of him.

The next case (Fig. 12-a) is that of an individual who typifies the problem becoming more and more important in present-day industry. This man, employed during the war, middle-aged and in apparently normal health, worked as a chemical operator. Four years after his employment, he had a coronary thrombosis and was absent for the usual period of time. He returned with a note from his physician suggesting that he be placed on light work. Such work was available and, after studying his cardiac status, we believed it to be within his capacities. Again, however, it was felt important to study the employee periodically to assure ourselves that he continued equal to his task. It was noted (Figs. 12-b and 12-c) that he was developing a gradual localized increase in the left ventricular salient, and fluoroscopy revealed diminished systolic

Fig. 11-c.

Fig. 12-a.

Fig. 12-b.

Fig. 12-c.

Fig. 12-d.

Fig. 13-a.

contraction and diastolic dilatation in this area. The ventricular aneurysm shows up very clearly in this oblique view (Fig. 12-d). The x-rays were lent to the patient's physician, and it was decided that further restrictions in his activity were advisable. Because of his age, the question of retirement came up, and this was the final solution of the problem.

The next four cases are presented as a group (Figs. 13) because they deal primarily with the discovery of bone lesions in employees who either had no suspicion of their presence or whose symptoms brought them to the Plant Health Department before they visited physicians on the outside. It is obvious that, in a working population of over 4,000 pathology like this can be discovered in any similar group if one looks for it.

The case shown in Fig. 13-a is that of a watchman who was required to open the gate for automobiles in the evening. One night the Medical Director noticed that he was holding one shoulder in an awkward position and favoring that arm while opening the gate. On examination the x-ray showed a lesion at the head of the humerus, which subsequently turned out to be an osteogenic sarcoma.

The next case (Fig. 13-b) is that of an individual who came into the Plant Health Department asking for some liniment for a painful left hip, due, he said, to an old football injury. The examining physician was suspicious and x-rayed the left hip, where he found the lesion indicated. The hip was later operated upon by a prominent orthopedist, who found a giant cell tumor.

The osteochondroma seen in Fig. 13-c was picked up when one of the executives complained that every time his arm brushed against an object he developed pain at the elbow joint. Physical examination revealed an excrescence much larger than appeared in the x-ray, most likely due to the non-opaque cartilagenous cap covering the tumor.

Finally, a young woman who had been treated for pleurisy came into the Plant Health Department when, after several weeks of treatment, she noticed a tender lump along the course of one rib. This mass was x-rayed, and an erosion of the inferior aspect of the rib was noted (Fig. 13-d). An operation was performed and sections taken which were considered by the pathologist to be diagnostic of an eosinophilic granuloma. No other bones were involved, and, from a survey of the literature, this appears to be the seventh recorded case of eosinophilic granuloma isolated in a rib.

THIS series of x-ray films demonstrates that the pre-placement examination may reveal the

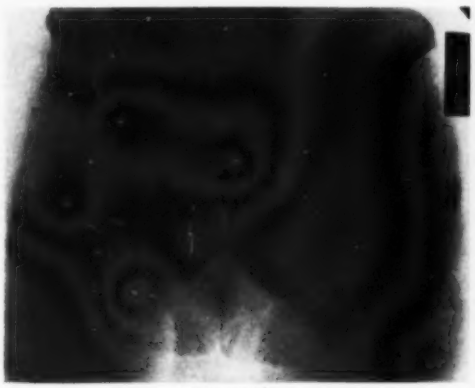


Fig. 13-b.

Fig. 13-c.

Fig. 13-d.

presence of extensive pre-existing disease in an apparently healthy individual. Such disease may, at some time in the future, re-awaken with subsequent loss of the individual's service to himself, his family, and society. Nevertheless, such a person often may be employed in active and productive work. This can be accomplished not only by modification of the work station but by what may be even more important—repeated re-checks of the individual's health. In such repeated studies, it is not enough for the plant physician to take the word of outside men. To a great extent, he must make the studies himself. It is also true that such measures will make him a figure of importance in a field which is becoming more and more the preoccupation of a greater number of medical men as our population ages, through the discovery of serious disease at an early stage when it is most amenable to treatment. Accurate diagnosis at this time will be of tremendous aid in the patient's ultimate recovery and of profound importance in delaying his eventual removal from society. It will also help to minimize the pressure of state compensation laws which increasingly throw the onus of aggravation into the lap of industry.

Presented at the Section meeting on Petroleum, Rubber and Chemicals at the Thirty-Fourth Annual Meeting of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, Detroit, Michigan, April 5, 1949.

Course on Rehabilitation of the Physically Handicapped

AN ADVANCED six-week course in rehabilitation methods for physical therapists will be given four times during the coming school year by the Institute of Rehabilitation and Physical Medicine, New York University-Bellevue Medical Center, in conjunction with New York University School of Education. Instructors will be DR. HOWARD A. RUSK, DR. GEORGE G. DEAVER, DR. DONALD A. COVALT, EDITH BUCHWALD, associates and staff of the Institute of Rehabilitation, and guest lecturers. The course is divided into three sections as follows: (1) SEVERE DISABILITIES AND THEIR REHABILITATION: This will include all aspects of orthopedic, medical, surgical cases, and their specific problems in rehabilitation will be discussed. The lectures and demonstrations will be given by physicians, and rehabilitation and other medical specialists. (2) SKILLS AND METHODS OF FUNCTIONAL ACTIVITIES: Theory, techniques, teaching methods, tests, and individual programs of functional activities will be discussed, demonstrated and practiced. Clinical observations will be included. (3) CLINICAL EXPERIENCE: Students will work with patients under supervision at the Institute of Rehabilitation and Physical Medicine. The courses are open to certified physical therapists who have the approval of the curriculum director, and four points of either undergraduate or post-graduate credit will be given. Classes will be held from 9:00 A.M. to 4:00 P.M. three days a week and from 9:00 A.M. to 5:30 P.M. two days a week. The four courses are scheduled on the following dates: October 3-November 11, 1949; January 2-February 10, 1950; February 20-March 31, 1950; April 10-May 19, 1950. The fee will be $62.00, or $15.50 per point, with registration $3.00. Qualified veterans may enroll in the course under the provision of P.L. 346 of P.L. 16. Applications and requests for further information may be submitted to EDITH BUCHWALD, Director of Rehabilitation Courses for Physical Therapists, Institute of Rehabilitation and Physical Medicine, 325 East 38th Street, New York 16, New York.

Management of Injuries to the Thorax

WILLIAM M. TUTTLE, M.D.,
Detroit

INJURIES to the thorax are often not serious in so far as the actual physical damage is concerned. However, individuals having such injuries may be severely hampered because of certain derangements in their normal physiology. Thus a simple rib fracture, if it occurs in an obese person, or one who has a pre-existing bronchiectasis, or in an old person, can result in serious difficulties. Therefore, treatment must be directed toward the alleviation of the deranged physiology rather more than toward the actual injury.

Injuries to the chest can be divided into two groups: Those which penetrate the chest wall and thus cause in many instances injury to intrathoracic structures, and those which contuse or lacerate the chest wall but do not enter the pleural cavity.

THE simplest injury to the chest, other than simple soft tissue damage, is the fractured rib and such damage is often looked upon as being relatively unimportant. However, it must be remembered that the jagged end of the fractured rib may tear the lung and give rise to a tension pneumothorax or hemothorax, or a combination of the two. If it does neither of these things, it does give rise to considerable pain which will hamper the individual's normal expiratory exchange and will make cough a distasteful act. The abolishment of cough in such cases is an important complication, for it must be remembered that patients who do not adequately clear their bronchial tree of secretions soon become so completely filled with secretions, that proper oxygenation of the blood is impossible and death results from a progressive anoxia.

The time-honored treatment of the fractured rib has been strapping of the chest wall. The necessity of immobilizing fractured ribs in order that they may properly heal is in the main useless and unnecessary. The rib is largely cancellous bone and will heal in whatever position the ends tend to approximate. Therefore, immobilization which is so essential in other types of fractures is not a prime requisite in the treatment of such fractures. We have now eliminated the basic need of immobilization in rib fractures as a prerequisite for healing. It now remains to discuss the value of immobilization as an adequate measure in the relief of pain. It is practically impossible to immobilize the chest wall with strapping unless the strapping is carried completely around the chest wall. Strapping of half the chest wall is entirely inadequate to immobilize it, except in the very young and muscular individual. In older individuals the soft tissues are completely relaxed and therefore do not give a satisfactory base for the tape to attach to. In the female patient the breast precludes adequate immobilization.

If, therefore, strapping is both unnecessary from the standpoint of immobilization and useless from a standpoint of adequacy then other methods must be sought. We have previously stated that the great danger which occurs from the simple rib fracture is that the patient will not adequately clear his air passages of secretions and the reason which was given was that of pain. Pain can be alleviated and the patient made comfortable and therefore able to cough by the use of an intercostal block. This is accomplished by introducing a fine gage needle of sufficient length over the rib which has been injured and then angling the needle downward and introducing it beneath the rib edge at its angle. At this point one to two cubic centimeters of a 1% solution of novacain are injected into the area. Care should be used to ascertain that the needle has not entered an intercostal vessel. This procedure should be carried out at levels extending approximately two to three interspaces above and below the injury. As a rule the block will last from four to six hours. Generally two to three treatments are sufficient for by that time sufficient hematoma has occurred between the fractured rib ends to do away with its painful effect.

IT WAS learned in the last war that an individual who received a contusing or penetrating wound of the chest would often within a period of hours develop an extensive bilateral pulmonary edema. This became known to those individuals who saw it as "the wet lung of trauma." The exact nature of this complication is still, I believe, not fully understood. There is apparently a reflex set up between the injury to the chest wall and the ability of the capillaries within the lung to retain their fluids, with the result that it escapes into the alveoli. This entity was treated by blocking the intercostal nerves above and below the injured area, thus reducing the chest wall portion of the reflex. It was also found, that the administration of atropine in large doses was of use in reducing the vagal or efferent portion of the reflex.

At times the injury to the chest wall may have been inadequately treated with the result that bronchial secretions have accumulated to such an extent that the aforementioned simpler methods will not completely clear the bronchial tree. When this is the case bronchoscopic aspiration should be resorted to. When the bronchial toilet has been completed, intercostal blocking is generally adequate to carry through for the remainder of the period of therapy.

Presented at the Thirty-Fourth Annual Meeting of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, Detroit, April 5, 1949.

IN THE preceding discussion of chest wall injuries we have dealt mainly with the simple rib fracture. We will now consider the individual who has multiple rib fractures, with the result that the chest wall has become flail. In a person so injured the chest wall on the affected side moves inward during the act of inspiration and outward during the act of expiration. The chest wall movement on the side of trauma is therefore directly opposite to the normal pattern and this type of breathing is called paradoxical respiration. What are the dangers of such deranged respiratory movements? It will be readily seen that during the act of inspiration the normal side inspires while the injured side is in the expiratory phase. Conversely, during the act of expiration the normal side expires while the injured side because of its flail character inspires. This results in a situation in which the patient is breathing alveolar air from one side to the other. In other words instead of receiving a normal air mixture which contains 20% oxygen and approximately 0.2% CO_2, he is breathing a mixture which contains 14% oxygen and approximately 5 to 6% CO_2. It becomes evident that the composition of the respired air has become greatly altered. A normal individual breathing a 14% oxygen mixture decreases to a considerable extent the saturation of his arterial blood. If to this is added 5 to 6% CO_2, the chest wall injury, with the constant rebreathing of the mixture, the situation soon becomes incompatible with life. It is therefore necessary in this type of injury to fix the chest wall in the most convenient possible way. The mobility of the chest wall is generally best stopped by the application of a pressure dressing over the injured part and the turning of the patient so that he rests on the affected side. In order to maintain the oxygen saturation of the blood at the highest possible level oxygen should be administered through a mask, under pressure if necessary.

SUBCUTANEOUS emphysema was greatly feared by the ancient military surgeons. It is caused by the escape of air into the subcutaneous tissues either directly from the lung or from the lung through a pre-existing tension pneumothorax. If the escape is directly from lung into the subcutaneous tissue by way of a pre-existing pleural symphysis, then it can be treated by either applying pressure over the area of injury or by the more direct approach of cutting down to the area of lung injury and allowing the air to escape through an open wound in the chest wall. This latter method should be used only when it has been established that a pleural symphysis is present. It should be remembered that subcutaneous emphysema when it does not involve the mediastinum is seldom a serious complication, although it is often a most distressing one. It does relatively little good to attempt to open the fascial planes except in those instances in which the mediastinal spaces have been involved. It is much more advantageous to administer 100% oxygen by mask in order that the nitrogen content of the air contained in the tissues may be completely replaced by oxygen, which in turn, will be rapidly absorbed into the blood stream.

When trauma to the chest has resulted in injury to the lung, with its resultant laceration, air often escapes into the pleural space. Air may continue to escape from the lung into the pleural space, but it is not easily evacuated from the pleural space by way of the lung. Under such circumstances a tension pneumothorax results. The mediastinum is driven far to the affected side. One lung is collapsed completely by the pneumothorax and the opposite lung is compressed by the displaced mediastinum. Such patients should be treated by the placing of a small urethral catheter through an intercostal space into the pleural space and this should then be attached to a closed drainage bottle. The lung rapidly re-expands and it is generally necessary to leave the catheter in place for but a few days.

TODAY one frequently sees extensive and severe fractures of the sternum in which the sternum itself may be fractured or it may be completely loosened on one or both sides from the costal cartilages. An injury of this sort gives rise again to paradoxical respiration, for the whole anterior chest wall moves violently in a paradoxical fashion with each respiratory act. The previously mentioned methods of immobilization do not work in such instances. We have found that the placing of uterine tenaculi through the skin and into the sternum and then attaching these by traction cords to an overhead orthopedic frame will in most instances immobilize the injured part sufficiently to secure good results. As a general rule not over four or five pounds of traction should be used. This treatment should be combined with intercostal block and the patient's airways should be kept clear. It is very essential in these patients that adequate and intelligent nursing care should be provided. Generally this is necessary for only a few days, but it is during these few days that the difference between a living and a dead patient is established. It must be remembered that before this method of treatment was established the vast majority of such patients died.

PENETRATING wounds of the chest where the lung has been injured bring up different problems. Such injuries are generally the result of a wounding agent which is either sharp, as in the case of a knife, or blunt as in the case of gun shot wounds. If severe injury to the chest wall results from such wounds, they should be handled in the manner which has been previously described. In many such instances, however, the actual injury to the chest wall is slight, but the lung has been lacerated and blood has escaped in large amounts into the pleural space. The amount of blood which has escaped is often times so large that the patient is extremely shocked.

The shock should be treated first, by the administration of intravenous fluids and preferably by whole blood. The respiratory physiology should be re-established by the administration of oxygen and the aspiration of the fluid blood from the pleural space.

It is not necessary unless it can be established that direct injury has been done to some large vessel to enter the pleural space by formal thoracotomy. It was established during World War II that the large majority of lung wounds stopped bleeding with the fall in blood pressure which comes from the immediate threatening hemorrhage, and that when the pressure was re-established bleeding did not begin again. The use of formal thoracotomy is therefore useless and often times a most dangerous procedure.

Blood as a rule does not clot in the pleural cavity and in approximately 90% of hemothoraces the outcome is both satisfactory and happy by simple pleural aspirations as a method of therapeusis. In 10% of patients with a hemothorax the blood will clot and in such instances it is extremely important that they be adequately treated by removal of the clot and decortication of the lung, thus allowing it to expand and fill the pleural space in a normal fashion. If this is not done the clot will further organize and severely contract the chest wall and encase the lung, the lung thus becomes useless and the individual becomes a respiratory cripple, not only as a result of the lung encasement, but also from the resulting thoracogenic scoliosis. The incidence of empyema in the clotted hemothorax is high. Such empymata are treated by decortication.

Foreign bodies which are retained within the lung should be removed, but they should not be removed at the time of injury. It was definitely established during World War II that the morbidity resulting from the removal of foreign bodies at the time of injury was 35%, while the morbidity resulting from their later removal at a time when the lung hematoma had subsided was only 1%.

This in brief is a resume of the treatment of thoracic injuries. It should be remembered that the most important precept in the management of such injuries is to keep the airways clear and the respiratory physiology as normal as possible.

(307 David Whitney Bldg., Detroit 26.)

"People Produce — Not Machines"

THE need of the hour is increased production—more goods, and still more goods, but "People produce—not machines." What is more important is the man behind the machine. It may be said to the credit of science that there is no mechanical problem it cannot tackle successfully, but it has yet to learn how to use its discoveries to advance the fundamentals of life. Hopeful signs are however visible on the horizon of the post-war era. It was exactly through the objective methods of scientific investigation that a psychologist like Henry Link staged "The Return to Religion." Such a happy transformation is now apparent in several other directions too. Manufacturers of machines are now more and more for incorporating humanics in the designs and techniques of their machines, and the recent trend of colour-conditioning machines is a laudable move in the right direction. Manufacturers are realizing more and more that human nature is subject to moods when what is wrong appears as right, and are more and more particular to devise guards on machines that will protect a worker against such evil moods also. This is the only way to solve successfully the burning and most taxing problem of industry today—strained management-labor relations. Human relations can only improve through fusion of science with religion, and it is most natural that such a fusion take place at the industrial medicine end.

—From "Industrial Medicine: Its Religious Aspect," by H. P. DASTUR, Medical Officer, Industrial Medical Department, Tata Industries, Ltd., Bombay, in *J. Indian Med. A.*, 18:3, 279-281, May, 1949.

Measures to Prevent Complications of Phlebothrombosis by Early Diagnosis

JAMES BARRON, M.D.,
Division of Surgery, Henry Ford Hospital,
Detroit

PHLEBOTHROMBOSIS is one of the most frequent and potentially most serious of the complications that we now find on the surgical service at the Henry Ford Hospital. We do not know the final answer to its prevention; we can only present our program for its early diagnosis before embolism has taken place and before the chronic stage of thrombophlebitis occurs.

We believe that phlebothrombosis is simply an early stage or forerunner of thrombophlebitis. In the former, the clot is soft and not firmly attached to the vein walls. In thrombophlebitis the clot is more firmly adherent to the vein wall. Phlebothrombosis is much more likely to give rise to an embolus. Much more careful examination is required to detect phlebothrombosis in the early stages. Our experience agrees with many others that the great majority of cases of phlebothrombosis have their beginning in the calf region of the lower extremities. This is quite fortunate for us because the lower extremities are easily accessible for clinical examination.

The causes of venous thrombosis are not definitely known. Slowing of the blood flow, changes in vessel walls and changes in the blood itself have all received some share of the blame.

Up to the present time, we know of no test that is 100% accurate in predicting those cases with a tendency to thrombosis. We have performed prothrombin tests on more than 350 patients following injury and operation. In our experience this has given no real help. We have been interested in the fibrinogen B test of Lyon and Cummine. This has been more promising, but as yet we are not willing to depend on it completely. Any practical test which could be used to predict these cases would be of very great help.

The history of venous thrombosis is rather interesting. Virchow in 1846 stated that all pulmonary emboli came from the femoral or pelvic veins. This teaching was accepted for some 80 to 90 years. Then Denecke, Homans, Frykholm, Rossle, Neumann, Bauer and others made excellent contributions showing that the veins in the lower extremities are the primary site of the venous thrombosis in well over 90% of the cases.

In the diagnosis of this venous thrombosis, we believe that some elevation of the temperature and pulse is very important, and especially is this true after operations or injuries. Any unexplained temperature and pulse rise calls for careful repeated checks for phlebothrombosis. Fig. 1 shows a typical case. Here the diagnosis was not made in time and patient died from a pulmonary embolus. Fig. 2 shows the course where a diagnosis was made and treatment instituted.

Many of these patients are apprehensive. They feel a sense of impending disaster. This should never be disregarded in a patient. If one will recall personal cases that have died from an embolus, one will remember this aspect vividly.

Presented at the Medical-Surgical Clinic, Thirty-Fourth Annual Meeting, AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, Detroit, April 5, 1949.

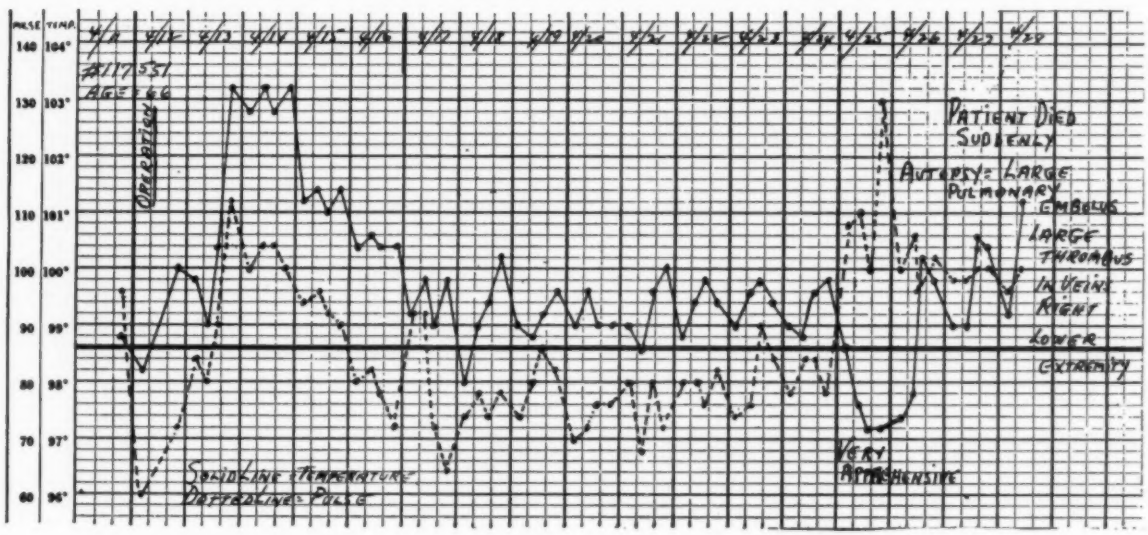


Fig. 1.

This chart is typical. The temperature and pulse subsided only fairly well after operation. During the postoperative period the temperature and pulse became more elevated. No extremity examinations were made. The patient became very apprehensive. On the 16th postoperative day, the patient died suddenly. A postmortem examination showed the veins in the right lower extremity to be filled with a large soft clot. A large pulmonary embolus was present

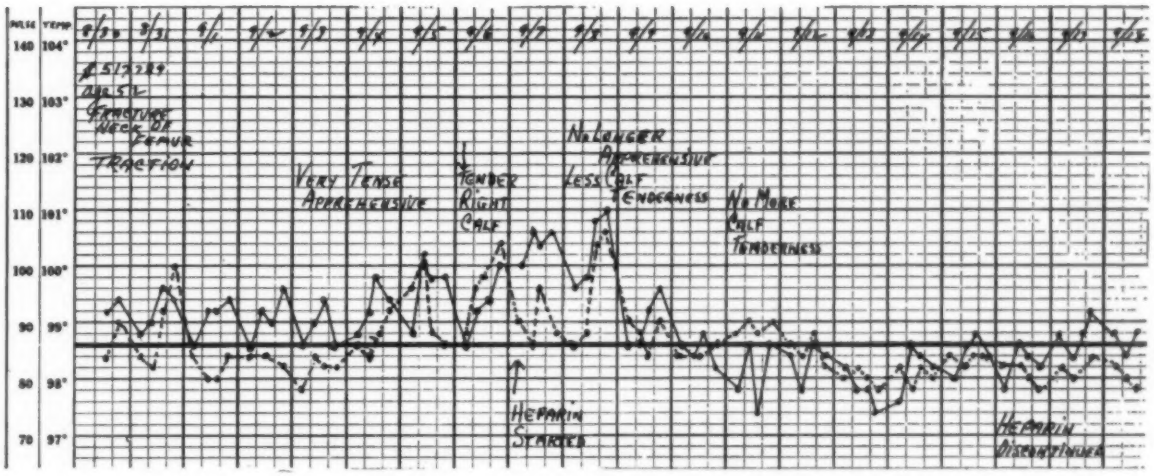


Fig. 2.
Temperature and pulse curve of a patient who developed phlebothrombosis. This was diagnosed correctly, and recovery effected with treatment. Note response of temperature and pulse after hepairn therapy was started

IN OUR experience a check of the lower extremities at least twice daily is the most important single method of diagnosing these cases. This is not difficult and is not time consuming. Figs. 3, 4 and 5 show the methods we employ. Palpation should be gentle and is best done with the knee slightly flexed to relax the muscles as much as possible. We first place gentle pressure on the plantar surface of the foot (Fig. 3). Next, the calf muscles are gently but firmly compressed against the posterior surfaces of the tibia and fibula (Fig. 4). Then the fingers are used to place pressure on the medial aspect of the calf just posterior to the tibia (Fig. 5). This last area is the most common site of tenderness in our experience. Any tenderness which develops in these areas is most important and cannot be disregarded. The adductor region of the thigh is often palpated and especially when we suspect thrombosis.

Marked edema only means that the early diagnosis has been missed. Edema of any marked degree usually means that the thrombotic process has already extended to at least the popliteal and femoral veins. One should make every effort to diagnose the condition before any degree of edema develops. The superficial veins in the lower extremity may be slightly distended in some of these cases. However in our experience the calf tenderness is evident quite often before the vein distention is present. Slight cyanosis is sometimes present, but is merely confirmatory.

Fig. 3.
The plantar surface of the foot is palpated

Fig. 4.
The calf muscles are gently but firmly compressed against the posterior surface of the tibia and fibula

Fig. 5.
The curved fingers are used to exert gentle pressure on the medial aspect of the calf just posterior to the tibia. In our experience this is the most common site of tenderness in these cases of venous thrombosis

In our personal series of cases, pulmonary emboli were detected in less than 7% of the cases where the calf signs were not present. All of these patients showed the typical temperature and pulse elevations. Apprehension was also apparent. With our present knowledge we are beginning to treat cases of this type with heparin as a therapeutic test. Otherwise, we will miss this small number of cases until a specific test for thrombosis is developed.

The lower extremity signs may change rather rapidly. Repeated checks are absolutely necessary and should be done at least twice daily. In our experience, this tenderness will be present in over 93% of the clinical cases of venous thrombosis with or without embolism. By this early diagnosis, we can start treatment and thereby greatly reduce the immediate danger of embolism and the later but equally important edema, induration, eczema and ulceration.

In our personal series of some 60 cases of venous thrombosis with and without emboli, we have had only four cases (less than 7%) of pulmonary emboli that had negative extremity findings. These were hysterectomy plus resection of recto-sigmoid colon, fracture of pelvis, cholecystectomy, and ligation of the inferior mesenteric vessels to control massive bleeding. Apparently these cases had venous thrombosis in the pelvic veins or elsewhere. All showed typical apprehension plus temperature and pulse elevations.

Many of our cases have followed trauma, and this is often mimimal. Trauma of the extremities with or without fracture is followed by venous thrombosis in many more instances than is generally appreciated. Certainly you in industrial medicine see a great number of these cases.

It is obvious that many cases of venous thrombosis do not lead to emboli or to edema, eczema and ulceration. However, we cannot predict which cases will or will not do this with our present state of knowledge. The only alternative is to prevent these as much as possible and make an early diagnosis when they develop.

In our experience, ambulation is not the final answer to the prevention of venous thrombosis. Over 85% of our personally treated cases were diagnosed in patients who were ambulatory. Ambulation is helpful in reducing the incidence of thrombosis. We have not used anticoagulents for prophylactic purposes up to now.

In cases of phlebothrombosis, we now have anticoagulents and vein ligation. My personal preference is for heparin. The expense is the main factor against this. We do believe that vein ligation is the method of choice in brain and spinal cord cases, cases where prolonged bed rest is necessary, cases where bleeding areas are present, cases where stages of operations are to be done, cases with poor kidney function, and cases where the patient will not cooperate on leg exercises and ambulation.

Our preference for heparin is mainly because of the excellent response when used in those cases diagnosed early by the methods we have attempted to outline. With the use of heparin, we believe that the progress of the clotting process can be stopped. In no cases treated to date have we had any increase in edema over that already present at the start of treatment. Certainly this is not true for those cases in which vein ligation was done. In treating these cases, one of the first responses is a disappearance of the apprehension. Next the temperature and the pulse return toward normal. If this does not take place in several days, the diagnosis is to be questioned. The calf tenderness usually subsides in several days.

Some may question the number of cases that we have. Our incidence is rather constant from month to month. Any one who comes in contact with patients in industry, homes or hospitals will be confronted with this problem. Many of these cases are and have been misdiagnosed as sore muscles, sore feet, atelectasis, pneumonia, heart failure, pleurisy, edema due to undetermined causes and other miscellaneous conditions.

At the Henry Ford Hospital the increasing number of the operations was accompanied by a corresponding rise in deaths from pulmonary emboli up to 1945 even though early ambulation was practiced fairly routinely. The curve of deaths from pulmonary emboli is on the downward trend for 1946, 1947 and 1948, since early diagnosis began to be stressed more and more.

We obviously do not have the final answer to the problem. However, we have reached the stage where we feel that if any patient is allowed to develop a pulmonary embolus or edema with its accompanying features it will be due to neglect on our part because we have failed to make an

early diagnosis. Deaths are not the only undesirable result of neglected cases. Edema, induration, eczema, cellulitis and ulceration are most important considerations, and this is especially true in industrial medicine.

SUMMARY: Venous thrombosis with or without embolism is a common complication. The great majority of cases (over 93%) can be diagnosed early by frequent examination of the lower extremities using the methods we have outlined. Apprehension plus temperature and pulse elevation should never be disregarded in any patient.

QUESTION: When a vein ligation is done at the hospital, where is it done?

DR. BARRON: We prefer to ligate the superficial femoral vein unless the clot has extended above this.

QUESTION: What about dicumarol?

DR. BARRON: Everyone asks that. I simply have used heparin a lot more than dicumarol. I know what heparin will do, and we can counteract this very easily with protamine.

QUESTION: Have you had any postoperative hemorrhages with heparin?

DR. BARRON: I have personally treated 60 cases. Three developed slight bleeding; one from hemorrhoids, not severe; one from ulcer; another from colon resection. In no case did we stop treatment. We reduced the dosage and went ahead.

QUESTION: I notice you ran the treatment following the embolus for about 14 days. Have you ever had any recurrent emboli in three or four weeks?

DR. BARRON: Out of the cases I have treated personally, I have had one recurrence definitely. We feel that if the patient is not going to be ambulatory, one should seriously consider ligation rather than anticoagulant. The one failure I had was a lady who could not get out of bed. The treatment was stopped without my knowledge and she threw another embolus five or six days after the treatment was stopped. We believe that if they are ambulatory they will have very little trouble.

QUESTION: What is the place of the para-vertebral block?

DR. BARRON: Personally, I think the paravertebral block has done a lot of harm because of the impression that this is good treatment for these cases. Certainly if one has a loose clot in the calf, it is very poor treatment. The only cases in which we use paravertebral block are those which everyone would call thrombophlebitis. The leg is swollen, painful—everything that goes with a full-blown case of thrombophlebitis. In other words, we use it only for discomfort and edema.

QUESTION: What is your method of heparin injection?

DR. BARRON: Before the war we used the continuous intravenous drip, and that was a headache to everyone concerned, especially where clotting time had to be checked every four hours. I have used the so-called Swedish method for the last two years; four times a day intravenously, 8:00 in the morning, 12:00 noon, 4:00 P.M., and 9:00 P.M. We give 125 mgs. at 8:00 A.M. and 9:00 P.M., and 75 mgs. at 12:00 noon and 4:00 P.M. We don't check the clotting time at all unless the patient has poor kidneys or is quite elderly. It has been a practical method. It doesn't seem physiological, but it works. The question comes up as to contra-indications. We do not use heparin in any neurosurgical case where the brain or spinal column has been operated on. Any bleeding there gets one into serious difficulties. We have given it as early as 24 hours after a major operation with no difficulty. With bad kidneys one has to be very careful about giving heparin. If a patient is going to be kept in bed for many weeks, heparin is too expensive. Ligation should then be considered. Poor kidneys in the elderly patient require careful watching. We are giving heparin to one man 84 years old right now, and he is taking it quite well.

QUESTION: Will you describe your ambulation?

DR. BARRON: Of the 60 cases we have had, 85% or more have been ambulatory from the first postoperative day. Our procedure is to get them out of bed the first evening after operation. We insist on their moving their feet about a thousand times in the bed every day. That still isn't the final answer. A milkman walked in who had had a pulmonary embolus while on his route, so certainly ambulation didn't affect him.

QUESTION: Do you get your hernias up, too?

DR. BARRON: The same evening. Industrial hernias go home the fifth day.

QUESTION: When do they go back to work?

DR. BARRON: In four to six weeks.

QUESTION: Where they are running a temperature, do you give antibiotics or sulphas?

DR. BARRON: Only when one has had a large pulmonary embolus and we attempt to prevent any infection in the infarcted area. Within the last two years only one patient has died with a pulmonary embolus that has been treated in this hospital. This was huge. She was treated with heparin. There were no more emboli, but the infarcted area became necrotic and abscess developed. She died later from pyelo-nephritis.

QUESTION: Do you keep them walking after the symptoms develop and when you start the heparin?

DR. BARRON: No. Our policy is to put them in bed until the leg signs subside and temperature and pulse drop back to normal. With heparin, we have to remember that a clot is present. There is still a lot of argument whether one can dissolve the clot. I am sure it is not dissolved after the fourth or fifth day, and whether there is any dissolving the first or second day, I don't know.

QUESTION: Do you follow your herniotomies after you send them home on the fifth day?

DR. BARRON: That is a good question. We do hundreds of these every year. Two-thirds of our cases develop within the fifth to tenth day following operation. We have had only one or two cases out of the hundreds of hernia repairs, and in all of these there was a reason why they should not have gone home on the fifth day. Just remember the temperature and pulse elevation, apprehension, check the lower extremities, keep an open mind, and you will be quite surprised.

Plantation Medicine in Hawaii

WILLIAM B. PATTERSON, M.D.,
Hawaiian Commercial & Sugar Co.,
Puunene, Maui, Hawaii

PLANTATION medicine on Hawaiian sugar plantations is not only industrial medicine but it also includes complete medical care to all the employees and their dependents, about 75,000 in all. This system of medicine has been financed by management in the past but now is financed through voluntary pre-paid medical insurance with management helping as much as 50% on some plantations. Ninety-five percent of the employees participate in the medical plan even though other medical care is available if the employees wish to purchase it.

The sugar plantations in Hawaii are united through the Hawaii Sugar Planters Association, which is a research organization supported by all the plantations. There is wonderful cooperation among the plantations and new ideas are passed from one to another through the Hawaii Sugar Planters Association. Also, Hawaii Sugar Planters Association maintains a group of specialists who carry on experiments to improve on the growth of sugar cane and the manufacture of sugar. New varieties of sugar cane are continually being developed which will produce more sugar per acre. A medical adviser is also retained who has made a special study of health conditions on the plantations. This medical adviser for the past 25 years has been DR. NILS P. LARSEN, and the wonderful record made by plantation medicine is the direct result of his efforts. He has advised and helped the physicians on the plantations. Originally he conducted extensive experiments on infant feeding and tooth decay. He made extensive studies on the nutrition of the workers. He has compiled health statistics for 20 years and through these he has been able to show the plantation physicians where improvements in health conditions could be made. And he has obtained the cooperation of the plantation managements who have spent large sums to finance plantation medicine.

ORIGINALLY, 50 to 75 years ago, health conditions on the plantations were very poor owing to the ignorance of the workers. Most of the workers were imported Orientals who had come from countries with high maternal and infant mortality rates. Tuberculosis and other diseases were prevalent, as the result of malnutrition, poor living conditions, etc. Now health on the plantations in Hawaii is the best of any rural area in the world where statistics have been kept. Health statistics from Hawaii as a whole are good, and better than those on the mainland in many categories. The health in the rural areas in Hawaii is even better than that in the urban areas, owing to the plantations.

In 1948 there were no deaths from infant diarrhea on the plantations. The infant mortality rate was 19, which is one-half that of the States. Maternal mortality was 1.5 per thousand which is very low. The T.B. rate for new cases on the plantations was lower than that of the States.

Many years ago plantation management saw the need for good health for the employees. Workers had to be imported from all over the world at great expense to the plantations. If the workers were sick half of the time it would mean that twice as many workers would have to be imported and cared for to get the work done. Therefore, the plantations did everything possible to keep the workers and their families healthy so that the workers would be able to work. The missionary influence was also great in the early days of the plantations, so that management was willing to spend large sums for the welfare of the workers.

Medical departments were developed to give the workers and their dependents complete medical care in the broadest sense. Well-equipped hospitals were built by the plantations and these have been kept up-to-date. These hospitals were staffed with A-1 physicians who were paid attractive salaries and in addition were allowed to do part-time private practice on non-plantation patients. Trained nurses were hired to assist the doctors, and field nurses were also employed to go into the homes of the workers to help with illness and to get the patients to the doctors early. Transportation was furnished pregnant women to go to pre-natal clinics, which were usually held in the plantation hospitals. Baby clinics were established, operated by the field nurses with the plantation doctor in attendance.

The main function of the field nurses was health education. The workers and their families were taught nutrition and sanitation and were given advice on all health matters such as prophylactic vaccinations, etc. Nutrition was taught in the schools, and a booklet entitled "Eating Your Way to Health" was written in simple language with illustrations. This was distributed to all the employees.

The value of home gardens was stressed and every family was encouraged to have a garden. Large areas of land were devoted entirely to home gardens and free water for irrigation was furnished by the plantations. The plantations operated dairies and sold the milk to the employees at cost.

Tuberculosis surveys were made by the plantations, with every individual getting a skin test. Then the plantation x-rayed every reactor free of charge. Every positive case was removed to a sanatorium.

Records were kept of all illnesses. Annual evaluations and comparisons were made, and these were circulated to business men as well

as to doctors. Everyone was interested in the health of the whole community and all cooperated to improve it. These things were started more than 20 years ago and now the results are obvious to all. Our health statistics show that our plantation population is healthier than any rural population in the world and even healthier than most urban populations. Our plantation people receive medical care as good as the mainlander of the $10,000 income group.

WHAT has been the effect on plantation medicine of unionization of the employees? Formerly, management provided the medical care to the employees and their families as a perquisite but now, with higher wages and the abolishment of paternalism, management is unable to give all this medical care to the employees. However, management has been convinced that the system of plantation medicine is good; it knows that the efficiency of the employee is increased if he gets good medical care and does not have to worry about paying large medical bills. The workers have been convinced that plantation medicine is good and have asked that it be offered to them through some form of pre-payment insurance. A "Medical Plan" has been formed which each plantation underwrites for its employees. The employee pays into the plan depending on how many dependents he has. There is complete coverage without limitations except for glasses and prosthetic appliances. The doctors still work for the plantations on salary and are allowed to do part-time private practice. The plantations collect from the employees only 50 to 80% of what it costs them to furnish the medical care. However, the plantations feel that it is absolutely necessary that the employees get good medical care and they are willing partly to subsidize it. The worker's morale and efficiency are high when his whole family receives good medical care without undue financial burden.

The one theoretical objection to plantation medicine is that the employees must go to the plantation doctors and do not have free choice of physician. However, the employees do not join the "Plantation Medical Plan" unless the plantation doctor is their choice of a physician. They are free to drop out of the plan at any time. About 95% of the employees elect to join the medical plan, which is proof that they like plantation medicine. No type of pre-payment medical insurance could offer full medical coverage without limitations for doctor and hospital for twice the amount that the plantation employees are charged. These rates are $1.65 per month for single employees, $2.50 for man and wife, and $1.10 for each child, with a maximum of $6.00 per month per family.

WITH the threat of government medicine so great, it seems that more industries should concern themselves with the welfare of their employees by encouraging them to take out medical insurance and even by paying for part of the insurance themselves. It will be far cheaper in the long run and will still preserve our American system of medicine.

"Tax, and Tax, and Tax"

WHEN the New Dealers try peddling the story to the country that political medicine would cost only a few dollars more withheld at source, and that the deduction would hardly be felt, taxpayers should bear in mind the British precedent that seven-eighths of the cost of this program will be taxed out of them directly. The deduction from the pay check would, at least initially, look small, but the real cost of the program would be reflected in higher income taxes. Try as the New Deal may to create illusions with mirrors, no one yet has ever devised a method by which the public can get something out of government for nothing. The people pay for what they get, and they must pay additional money to permit the bureaucrats who pose as their benefactors to provide them services bought more cheaply by themselves.

—From "The Hidden Costs of State Medicine," in *Chicago Tribune*, August 21, 1949.

Taking the Brrr out of Beryllium

HERBERT T. WALWORTH,
Director, Industrial Hygiene Division,
Lumbermens Mutual Casualty Company,
Chicago

BERYLLIUM has become a familiar word to the public, owing to widespread radio and newspaper publicity. Frequently, such publicity causes undue concern because of lack of accurate information. To illustrate this point, recently we were asked what the danger was from beryllium when working in rooms lighted with fluorescent lamps. Obviously there could be no hazard from a material sealed in a tube, unless the tube fell and accidentally hit someone. And yet the beryllium problem has been perplexing, and one which has caused considerable controversy among the various professions concerned.

Perhaps the control of beryllium hazards was delayed because of the failure of industrial hygienists to recognize that minute quantities of a chemical not previously considered harmful, could cause an industrial disease. Early sampling of plant atmospheres and subsequent chemical analyses did not indicate the presence of beryllium because the analytical chemical methods used were not sufficiently accurate to determine quantities heretofore considered safe for all types of toxic dusts and fumes. Further to complicate the control of beryllium hazards, beryllium poisoning frequently developed in persons with no recent, and, in some cases, no apparent, history of exposure to beryllium compounds.

In this paper, I shall briefly outline some of the more important beryllium hazards, and discuss the preventive measures necessary for their control.

History

BERYLLIUM was discovered in 1779, however there was little application of the metal to industry until the first world war. It belongs to the magnesium and calcium family, and is crystalline, brittle and hard. Beryllium occurs in nature in the form of minerals as minor constituents of certain natural ore deposits. Of the known beryllium minerals, beryl, which is a beryllium aluminum silicate, is by far the most common. Most of the beryl ore produced up to the present time has been obtained as a by-product of feldspar and mica-mining. The uses of beryllium, until recent years, have been minor. However, metallurgical advancements during the past 15 years, and especially during World War II, have greatly increased the demand.

Beryllium has an atomic weight of 9.02, and a melting of 1285° C which is high in comparison to other light metals. The metal imparts many desirable characteristics to other metals when alloyed with them, thus increasing its potential use. Beryllium and its compounds have many applications in small quantities. Some of the most common are in alloys, radio and television tubes, electric sign tubing, x-ray windows, electric conductors, refractories, ceramics, chemical and pharmaceutical compounds, atomic energy operations, and, until recently, in phosphors for fluorescent lamps.

Beryllium Poisoning

ALTHOUGH beryllium has been known for 150 years, it was not until the mid-1930's that disease was associated with its industrial use. The early reports of beryllium poisoning came from Europe, but in 1943 publications on cases began to appear in the United States scientific literature.

Early cases of the disease in the United States precipitated considerable confusion, because:

1. Beryllium and its compounds were previously considered to be non-toxic.
2. There appeared to be no relation between severity of exposure and development of cases.
3. Some beryllium plants had reported no cases.
4. While beryllium exposure appeared to be present in most cases, there also was exposure to other materials.
5. Some cases occurred where there appeared to be no beryllium exposure, and in other cases the exposure occurred months or years prior to onset of the disease.
6. Air sampling and analysis by the then existing methods showed no beryllium, or at least only minute quantities.

One of the most puzzling things in the beryllium problem has been the development of two or three characteristic cases in persons living in the neighborhood of beryllium plants, but having no industrial exposure.

Since the development of the early beryllium cases, considerable research has been done and many questions answered. Yet difference of opinion still exists as to the pathogenic properties of beryllium compounds. However, there seems to be little doubt at this time but that beryllium has been the cause of a characteristic disease from a common exposure. To date, several hundred cases of poisoning have been attributed to exposure to beryllium or its compounds.

Exposure to beryllium produces two general manifestations: dermatologic and respiratory. The dermatologic reactions are contact dermatitis and chronic skin ulceration enclosing a crystal of beryllium or one of its compounds. The respiratory reactions are chemical bronchitis and

Presented at the Joint Annual Meeting of the CENTRAL STATES SOCIETY OF INDUSTRIAL MEDICINE AND SURGERY, and the CHICAGO SOCIETY OF INDUSTRIAL MEDICINE AND SURGERY, Chicago, May 15, 1949.

chemical pneumonitis. The most serious manifestations are related to the respiratory tract in either the acute or chronic forms. A characteristic feature of the acute form of beryllium poisoning has been the delay between the beginning of symptoms and the lung changes. In the case of the chronic disease, symptoms and lung changes often follow termination of exposure by periods of several months to six years. The type of reaction produced depends on many factors of exposure, including type of compound, particle size of dust or fume, extent of air contamination, duration of exposure, solubility of compound inhaled, and perhaps other factors which up to now have been overlooked.

Beryllium Compounds of Industrial Significance

BERYLLIUM may be encountered in industry in many chemical forms. In addition to the metal, the common industrial compounds are zinc manganese beryllium silicate, zinc beryllium silicate; the sulfate; fluoride; oxyfluoride; hydroxide and oxide. Frequently these compounds do not occur singly in an industrial process, but sufficient data are now available to incriminate the metal, the sulfate, fluoride, oxyfluoride, oxide and hydroxide as capable of producing beryllium poisoning. In the case of the metal, however, some investigators believe that the active agent may be the thin layer of beryllium oxide which forms on the surface of the metallic dust particles.

In 1943 the U.S. Public Health Service reported that beryllium of itself was not toxic and that any toxicity of beryllium compounds was due to the acid radicals of those compounds. Evidence which indicates that this may not be the case can be found in the literature.

Industrial Exposure to Beryllium and Its Compounds

INDUSTRIAL beryllium exposures occur in much the same manner as exposures to other toxic materials with which we are more familiar. In the lead industries, for example, the handling or processing of the metal and certain of its compounds results in the contamination of workroom air with dust or fumes. The extent of exposure to lead will depend upon many factors of operation and upon the efficiency of the controls in use. Effects of the exposure on the employee will depend on the nature and extent of the exposure. Essentially the same factors are involved in beryllium exposures. The significant exposures involve the metal, usually in chemical combination, in the form of dusts, fumes or mists.

The industrial processes of greatest importance in the beryllium problem are the extraction of beryllium compounds from the ore; and the manufacture of beryllium-copper alloys, electric sign tubes and fluorescent lamps. These have been the processes responsible for the majority of the beryllium poisoning cases. Other industrial processes involved to a lesser extent include laboratory work where beryllium is used, ceramics manufacture, and fabrication of beryllium-containing crystals for radio use. In addition, cases have occurred in the atomic energy industry, but the details of the processes involved are not generally available. A few cases have been reported among persons living in the neighborhood of plants using beryllium.

Extraction of Beryl

AS WITH most industrial processes, there are variations in the equipment used and the procedures pursued from one plant to another. The following brief description of the extraction of beryllium from beryl, therefore, is intended to present some of the essential features of a typical process rather than a specific description of all operations. A description of mining of the ore will not be given, since poisoning has not occurred in this industry.

The beryl is received at the plant in comparatively large pieces and run through a dry crusher and then through a wet ball mill to reduce the partial size to a fine powder. The wet ore is then mixed in suitable equipment with soda ash and sodium fluosilicate. Briquettes are made from this mixture and these are passed through a furnace at high temperature where sodium beryllium fluoride is formed as the only water soluble constituent of the briquettes. When making other beryllium compounds, the processing plant may use other chemicals in mixing.

The briquettes from the furnace are then crushed, and again ground in a wet ball mill, and the soluble sodium beryllium fluoride extracted with water. The resulting solution is then treated with caustic soda to form beryllium hydroxide as a precipitate. The precipitate is then filtered and again heated in a furnace for conversion to beryllium oxide.

In this process, the operations most likely to result in significant exposure to beryllium are heating of the briquettes, crushing the briquettes and heating of the beryllium hydroxide to produce the oxide. These and similar operations in beryllium extraction have been responsible for perhaps the largest number of cases of poisoning. Depending on the type of process, the oxide, fluoride, hydroxide and sulfate compounds of beryllium have been of significance in this industry.

Beryllium-Copper Alloys

THE processes involved in the production of beryllium-copper alloys do not vary materially from those in the usual non-ferrous foundry. The first steps in the process involve mixing and heating beryllium oxide, copper oxide, pure copper and carbon in an electric furnace. The temperature is increased to above the melting point until a homogeneous mixture is formed. The furnace charge is then poured into metal molds to form pigs of what is called master alloy. This alloy may contain several per cent of beryllium and is used with other metal mixtures for producing alloys with lower beryllium content and having specific applications.

Master alloys containing varying percentages of beryllium are produced to meet the demands of the foundry trade, or for the production of specific types of castings by the beryllium industry itself. The master alloys in the form of pigs are remelted in coke, oil or gas-fired furnaces and cast in sand molds. Casting shakeout, casting cleaning, grinding and the like are operations which usually follow in the production of the castings. The resulting castings will contain beryllium in amounts up to 0.4%. During the period when beryllium poisoning cases occurred, these alloys contained up to 5% beryllium.

In the operations just described, exposure to beryllium oxide fume is most significant. Such exposures may occur in the furnace melting operations. Handling and disposal of the furnace dross may be productive of oxide dust and fume, and metal dust. A minor dust exposure may result from casting cleaning operations. Available information indicates however, that there have been no cases of beryllium poisoning in foundries producing low beryllium content alloys. The reported cases in the alloy industry have occurred in those plants producing master alloys of high beryllium content.

Some of the significant factors in these exposures are fume, age and particle size, and the extent and duration of exposure.

Electric Sign Tubes Manufacturing

A LARGE percentage of the electric advertising signs produced today have a powder coating on the inside of the tubes which contains beryllium in one of its forms. One of the active ingredients of this powder or phosphor, is zinc-beryllium silicate. The exposure in this industry is to the dust of the phosphor, which has been the source of at least four cases of berylliosis.

The small sign shop usually receives the phosphor in liquid suspension. Others may receive dry powders and mix the phosphors as needed. If dry mixing is done, dust may contaminate the working atmosphere, and spillage of liquid suspension which eventually dries may also be productive of dust.

Tubing is coated on the inside by pumping the liquid suspension into the tube with a special device which eliminates dipping. The tube drains into a container and is allowed to dry. Cutting and bending of this tube may result in slight dust exposure, while spillage of the liquid phosphor and accumulation of dry powders on benches and floor may be productive of considerable dust. The fact that the phosphor powder must be ground very fine is an important factor in the exposures in this industry.

Fluorescent Lamp Manufacturing

THE preparation and mixing of powders for fluorescent lamps is a process which has been the source of more than 50 cases of beryllium poisoning. In this industry, the compounds involved were zinc manganese beryllium silicate, beryllium oxide and zinc beryllium silicate. Undoubtedly the highest exposures in this industry occurred in dry powder mixing.

The phosphors for fluorescent lamps contained beryllium in percentages ranging from 4 to 12% when the cases in this industry were occurring with greatest frequency. Later, the beryllium percentages were reduced to below 2%. Now it it reported that the manufacturers of fluorescent lamps have eliminated beryllium entirely.

Disposal of Fluorescent Lamps

THE dangers associated with the disposal of fluorescent lamps involve the breathing of the phosphor dust, and injury due to cuts from the glass coated with beryllium containing dusts. The importance of this phase of the problem has, in my estimation, been greatly over emphasized. It is doubtful that cases of beryllium poisoning have resulted from breathing of phosphor dusts during lamp disposal. However, a few cases of injury have resulted from cuts, either during lamp disposal or from accidental breakage. In these cases, the beryllium compound was imbedded in the skin causing a subcutaneous tissue reaction similar to that found in the lungs in chronic berylliosis. Areas so affected may become ulcerated and are difficult to heal, and surgical removal may be necessary.

The disposal of small numbers of fluorescent lamps should require no more than ordinary precaution to prevent breathing of the phosphor dust and to guard against skin cuts from the broken glass. There are many ways in which this can be done safely, and there would appear to be little need to discuss these procedures in detail. Where cuts are received from the broken glass, the wound should be cleaned thoroughly to remove any beryllium particles and then followed closely until healing is complete.

When large numbers of fluorescent lamps must be disposed of, this may be done safely by one of the following procedures:

1. Break lamps out of doors in a waste disposal area or in a waste container. The operator should wear approved respiratory protection, gloves and full-protection goggles. Ultimate disposal of the lamps should be such that the public will not be unduly exposed to the glass and powders.

2. Break lamps in an isolated room used for that purpose only and provided with efficiently designed ventilation. The operator should wear gloves and full protection goggles.

3. Break lamps under water in a suitable container. Disposal of the sludge and broken glass should be done in the wet state.

Since fluorescent lamps contain a small amount of mercury, the disposal method selected should take this factor into consideration to prevent the accumulation of the metal on floors or work benches. However, if disposal is done outside, the possibility of a hazard from this source probably would be remote.

The manufacturers of fluorescent lamps have eliminated the use of beryllium compounds from

their phosphors. Eventually, therefore, the problems of disposal of lamps as they relate to beryllium also will be eliminated. However, because of the large number of beryllium lamps in current use and in storage, perhaps two years will be required to consume the present supply. Whether the new lamps will present new problems, in addition to the potential flying glass and mercury vapor hazards, is unanswered now.

Control of Industrial Beryllium Exposures

THE environmental control of industrial beryllium hazards involves essentially the same principles as the control of other health hazards. However, because of the high order of toxicity of beryllium and its compounds, controls must be designed to provide greater efficiency of removal of the contaminant than with other types of hazards. The control methods applicable to the dust, fume and mist hazards of beryllium are substitution, local exhaust ventilation, enclosure and ventilation of the enclosure, and respiratory protection. As with other industrial health hazards, respiratory protection has limited application as the equipment is difficult to wear and supervision is a problem to insure protection.

We already have seen the application of substitution in the control of beryllium hazards in the fluorescent lamp industry. However, this method of control will have limited application if the beryllium industry is to continue.

As previously mentioned, there are two important factors which have slowed progress in the control of industrial beryllium hazards. First, the lack of a suitable method for determining beryllium as a method of evaluating exposures, and, second, the lack of sufficient data regarding the quantities of air contamination necessary to produce the disease.

The first problem has been overcome to some extent by the development of accurate spectrographic methods of analysis. However, these methods are expensive, and the specialized equipment is not generally available to industries or agencies concerned with beryllium problems. We still are in need of a rapid and accurate chemical analytical method.

The second problem has not been solved because of the lack of data concerning the extent of exposure in relation to presence or absence of the disease. We do know, however, that the toxicities of beryllium compounds vary, and that, in general, these compounds are considerably more toxic than the lead and mercury compounds with which we are familiar. Continued cooperation by physicians, research workers and industrial hygienists is necessary to insure complete control of beryllium hazards in industry.

Health Education

PROVIDING medical service is not any more health education than is giving a man a stenographer to teach him how to write or spell. To give him things is not helping him to do anything for himself, although it may be important to make these opportunities available to him. In fact, the over-emphasis on service to the exclusion of what man can do for himself may be fundamentally wrong. It may build in him the wrong attitude of having things done for him and expecting more and more to be done for him by his employer, perhaps the state. He must learn to do things for himself, and only through education will this be accomplished. The physical examination itself is not health education, but helping a man to see the need for regular physical examinations; helping to develop an attitude that takes him to the doctor at the right time, when he feels the first lump that might be cancer, etc. Helping him to understand the finding of his examination and how to adjust his life to his physical condition. That is education. Not the hospitalization plan, but developing in a man an appreciation of the importance of hospitalization insurance for his family, not just as a requirement, something taken out of his pay envelope. That difference is education. Not the nurse of the first-aid station; helping him to understand the importance of first aid, when to seek the nurse's advice, such as when to take a short rest. That may be education. Not the athletic field or the equipment, but giving him an understanding of the place of athletics and recreation in his life to use his facilities wisely at all ages. That is education. Not the safety provisions but developing the feeling of urgency to cooperate with all safety rules and provisions in the shop and at home. That is education. Not the rest period, but guiding him to use his rest periods so he will return to his bench a refreshed person. That is education. Not the Cafeteria, but helping him to select and enjoy wholesome food at work and away from his work. How to keep his weight under control. That may be education. Not holidays, but helping him to use his evenings and his holidays and vacations to make him more fit physically and socially. Yes; helping him to develop a philosophy so that he sees his importance in the large scheme of things. That may be education. Without such education, the money spent for elaborate services is wasted or at best paying inadequate dividends.

—From "Health Education Can Be Good Business," by DR. ARTHUR STEINHAUS, Professor of Physiology, George Williams College, Chicago, at the Ninth Industrial Health Congress, Chicago, January 17-18, 1949; abs. in *Industrial Hygiene Newsletter*, April, 1949.

Problems in the Management of the Causalgic States of the Upper Extremity

ALBERT S. CRAWFORD, M.D.,
Surgeon in Charge, Division of Neurological Surgery,
Henry Ford Hospital
Detroit, Michigan

ONE PROBLEM that has lately become of common interest to the neurological and industrial surgeons is the so-called causalgic state. You who are older will remember that most, or many, of the cases with serious fractures, particularly around the elbow and wrist, where there had been more or less constriction, resulted in swelling and, later on, in fibrosis with a great deal of pain. Those conditions were considered a part of the course with fractures, were thought to be due to ischemia, and were treated symptomatically with physiotherapy. But, of late years more interest has been focused on the problem, and we seem to be understanding better the mechanism of the etiological factors.

Those of you who have treated this type of case know what is meant by the term causalgia. It has been defined by De Takats, of Chicago, as "a painful vasomotor disturbance of an extremity." There have been several theories as to the nervous mechanism involved in the process. The one which seems to explain it best is Livingston's "internuncial pool." The afferent, or sensory, impulses from any noxious process (i.e., contusion, burn, inflammatory process, etc.) set up certain reactions in the spinal cord at the level of entry of the involved nerves. These impulses may go up or down the cord or even cross over to the opposite side. By their connections through the connecting rami, sympathetic impulses are set up, which cause the vasomotor disturbances which are the basis of the cyanosis and swelling.

Now, as to the characteristics of this condition. First of all, it starts out as a pain. All patients report that they have pain. It may follow the trauma in a few hours, or not come on until a day or so later, or it may even come on weeks or months after the initial injury. But the pain is more or less constant in type; it is described as a burning, sometimes with a sensation of intense heat; sometimes it is a dead, numb feeling with a tingling or other type of paresthesias; or it may be at times a sharp and stabbing pain, aggravated by movements and compression; sometimes it feels better with the arm down but usually it is better with it elevated. Sometimes the patients notice that it is better when the arm is kept cool, and that it becomes worse in the heat, but it is a very trying type of pain.

There usually develops atrophy or disuse as well as that which comes from the cutting off of the blood supply because of the vasospasm. In some cases there develops the so-called Sudeck's atrophy where x-rays show atrophy of the fingers, and examination will reveal atrophy of the fingertips around the nails and tapering of the fingers. With capillary studies one can demonstrate that the capillaries are cut down in caliber, and other tests also show a vasomotor constriction. It is undoubtedly a nervous phenomenon. The reaction is carried on by the nerves that were injured in the trauma.

DIAGNOSIS is made from the history. The trauma does not necessarily have to be a fracture or contusion. It can be chronic irritation of the skin. It can even result from such conditions as Raynaud's or scleroderma. It can come from chronic arthritis. Anything that brings on the secondary vasoconstriction can be an etiological factor. The diagnosis is made from the history of the pain and the clinical findings. There are several tests that can be performed, of which the most effective is the procain injection, either paravertebral injection of the dorsal nerves, first and second on the affected side, or a stellate block done opposite the seventh cervical transverse process which is usually above the apex of the lung. The novocain—usually 2% procaine, using about 15 cc.—is allowed to infiltrate down in the fascial plane where the sympathetic nerves run. Enough is injected until there is a cessation of the pain and a feeling of numbness. Usually a Horner's syndrome develops in which there is miosis (the pupil made smaller), ptosis and enophthalmos.

If the injection is effective, it can be repeated two or three times at intervals of several days apart, or you can use Etamon injection, about 4 cc. Now we have Priscoline, which is prepared for oral administration. With the use of Etamon or Priscoline there is a tendency to a fall in blood pressure, and one has to watch carefully in patients who might have a tendency to coronary involvement. There is a metallic taste for a while after the use of the drug. If Etamon has been ineffective, we do not believe that it should be used over any length of time, but if it has given good results, then it indicates that surgery might help.

THERE are three different types of surgical approach. One is the more extensive pre-ganglionic sympathectomy through the anterior approach. Another is the post-ganglionic of Teleford where one does not try to take out the ganglion and the trunk. But the Smithwick operation, which is the pre-ganglionic, through a

Presented at the Medical-Surgical Clinic, Thirty-Fourth Annual Meeting, AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, Detroit, April 5, 1949.

dorsal approach, has proved to give the best results and it is the one that we use. I believe the majority of neurological surgeons also prefer this method.

This operation consists of removing a segment of, usually, the second rib in the paravertebral region and resecting the sensory root of the second dorsal nerve and then pulling on it until one is led to the sympathetic trunk. A section can be made below the ganglion of the third, and then the rami of the third and second are sectioned, freeing up the trunk to the stellate. We place silver clips on the severed rami so they cannot regenerate and also to serve as markers. The sympathetic trunk is then freed up to the stellate, but we are careful not to injure it for there usually results a Horner's syndrome, which is rather troublesome to the patients afterwards. The whole trunk with connecting ganglia is pulled up through the muscles and fastened there to cut down the changes of regeneration.

This procedure has been reported by many writers, and I think it has given the highest percentage of good results. It is really quite interesting to see the dramatic results of such a sympathectomy. Hands have been blue, cyanotic, cold, clammy, with thin shiny skin, very sensitive to touch. Because of this, patients are afraid to take hold of anything because even flexing the fingers is painful, and they keep from touching their hands because it hurts them so. But after the operation the hand size rapidly shrinks down; the swelling goes away, and the color is reduced to near normal. The coldness is replaced by a warm, dry skin. It has been a very satisfactory result for surgery.

Unfortunately, some of these cases are not permanently relieved. Some have a return of their pain and disability. In a few cases it can occur on the other side. It was previously referred to as being on the basis of Livingstone's internuncial pool. We had one case where we did a sympathectomy on the opposite to relieve the trouble. The patient later on became a problem as a psychoneurotic, much delaying her rehabilitation.

Unfortunately, in many of these cases the compensation factors become predominant and make the treatment more difficult. You who have had to treat this type of case, know how difficult they can be. They feel they are not the same as before the accident; never will be the same, and dwell on that so much that they finally develop pains elsewhere, in the shoulder, neck, head and other places, and become quite a trying problem.

We had one case that became so trying that we had to go beyond sympathectomy and do a medullary tractotomy. This is an operation to sever the pain pathways in the side of the medulla. By this means a pain level can be obtained as high as the second cervical dermatome. The only disadvantage is that pain and temperature sensation are lost from the whole side of the body, opposite to the side of the cutting. This is usually less distressing than the original pain. If, even after a medullary tractotomy, the patient becomes a hopeless invalid, there is another operation that can be done, namely, leucotomy. This should be the last resort a surgeon can offer. You probably have heard about this operation and know that it results in some changes of personality. It should be the last resort in treating these cases, and used only when they have become hopeless invalids and are spending most of their time wailing over their bad luck.

The sympathectomy helps about 75% of our patients, and certainly is the thing that should be tried if procain, spinal block, and Etamon treatment have resulted in even a transient relief of pain.

(A patient was shown, a woman who was a fairly typical case of causalgia after a hand injury. She was relieved by sympathectomy.)

QUESTION: Have you used the stellate block as prophylaxis against causalgia?

DR. CRAWFORD: We have not had any experience using it for this purpose, but it could be so used. Priscoline, the oral Etamon, can be given easily and, if not used in excess, would probably be all right to try as a prophylactic. It should be given promptly as soon as any signs of trouble is present.

QUESTION: Do you have any observations as to the emotional stability or lack of stability of these patients?

DR. CRAWFORD: I think most of them are emotionally unstable, and there is a strong neurotic element in these cases. That has been my observation and experience.

QUESTION: Was the particular case you showed industrial?

DR. CRAWFORD: This case was not industrial. Our industrial cases are not available as they happen to live quite far away, but she illustrated the same thing. Her hand was swollen, quite tense and blue. We didn't dare touch her hand before. After the operation the swelling subsided and you can see that now it looks fairly normal.

QUESTION: Do you get better results in non-industrial than in industrial cases?

DR. CRAWFORD: Yes, I think we do. The industrial cases are more of a problem than the non-industrial because of the psychic element from the compensability. The percentages are better in the literature in the non-compensated than in the compensated cases.

Dermatological Hazards in the Cigar Industry

M. H. SAMITZ, M.D., M.SC. (MED.),
Assistant Professor of Dermatology and Syphilology,
Graduate School of Medicine, University of Pennsylvania,
PRIMO MORI, M.D.,
Fellow in Dermatology, Graduate Hospital, University of Pennsylvania,
and
CHARLES-FRANCIS LONG, M.D.,
Medical Director, Bayuk Cigars, Inc.,
Acting Associate Professor Industrial Medicine,
Woman's Medical College of Pennsylvania

BEGINNING with the second decade of the 20th century the manufacture of cigars followed the revolutionary trend in industrialization—the replacement of machines to carry out procedures performed by the hands of man. Prior to this industrial mechanization, the six or seven billion cigars manufactured in the United States every year were made by hand either in small dingy factories or in buckeyes, which were small shops in which cigars were bunched and rolled by hand in a back room and sold across the counter out front. Now at least 90% of the cigars produced in the United States are turned out by machine, and the handmade cigar is rapidly becoming an extinct commodity for a disappearing clientele. In 1917 a machine was developed for making long-filled cigars automatically. A machine for making short-filler cigars was perfected at about the same time. Machinery for wrapping cigars in tissue paper was introduced about 1925. Later tin foil was used and, since 1929, cellophane. A cigar-sorting machine, which separated cigars according to color, was introduced about 1926.

These mechanical devices, particularly the invention of cigar-making machines, have revolutionized the industry. Significantly, the most direct effects of mechanization changed this industry from a man's to a woman's and reduced the size of the labor force required.

1. *Number of Factories:* There were 2,760 cigar factories in operation in the United States during 1947, the last year for which figures are available. The great majority of these were very small plants with few workers employed. This is shown by the fact that 123 factories, or 4% of all factroies, turned out 92% of the cigars manufactured. At the other extreme, 2,461 of the 2,760 plants (89% of the total number) accounted for only 3% of the cigars produced.[1]

The figures are as follows:

No. of cigars produced per factory in 1947	Number of factories	Per cent of all factories	Per cent of total cigar production accounted for
Under 500,000	2,461	89%	3%
500,000 to 5,000,000	176	7	5
5,000,000 to 40,000,000	87	3	28
Over 40,000,000	36	1	64
Total	2,760	100%	100%

2. *Hand and Machine Plants:* These figures show that 36 plants accounted for nearly two-thirds of all the cigars manufactured in 1947. These are all large plants which make cigars by machine. In nearly 2,500 small plants shown in the above figures, hand methods of manufacture prevail. Some of the larger plants make cigars by hand, however, or by a combination of hand and machine methods.

The Department of Labor has estimated that in 1940, 77% of all cigars were made by machine, 19% by hand, and 4% by the machine bunch-hand rolling method.[2] There is no later estimate, but it is undoubtedly true that the proportion of cigars made by machine is considerably greater today—probably close to 90%.

Pennsylvania is by far the most important cigar producing state. It accounted for 43% of all cigars manufactured in 1947. Florida is next with 16%, followed by New Jersey with 4%, Virginia with 4.3%, Ohio with 4.1%, and South Carolina with 3.8%.[1]

There are about 45,000 production workers in the cigar industry today,[3] and Philadelphia is the leading cigar center in the United States, with 9,000 to 10,000 cigar workers.

Cigar production has been relatively stable over the last few years, varying between 5 and 5.9 billion annually. During the past year there has been a trend toward cheaper cigars, as the high cost of living has forced smokers to shift to lower-priced goods.

THE purpose of this study is to review the hazards causing dermatitis in the manufacture of cigars. The responsible agents will be grouped as follows:

1. Tobacco and other materials used in the making of the cigars.
2. Mechanical and physical agents, as friction and moisture.

[This is the sixth of a series of papers reviewing in the dermatological field, the hazards encountered in the Commodity Goods Industries of the Philadelphia Industrial Center. These papers are incorporated as part of the lecture course in "Industrial Dermatitis" given to the post-graduate students in dermatology at the Graduate School of Medicine, University of Pennsylvania, Department of Dermatology, DR. DONALD M. PILLSBURY, Director.]

3. Appliances and machinery responsible for injuries to the skin.

4. Dust and vapors: as agents producing dermatitis, and as agents producing other medical conditions.

A survey of the dermatological hazards in the cigar industry entailed a complete tour and inspection of one of the largest cigar manufacturing plants in the world. Two smaller plants were also examined in order to provide a thorough cross-section of cigar making as an industry in Philadelphia. A few shops where cigar rolling is carried out by hand still function as individual enterprises. However, these individual shops employed only a handful of workers who were not included in this study.

The large plant employed approximately 4500 workers. Women constituted 85% of the personnel, and of this group 25% were Negroes. One may say that the actual manufacturing of cigars is exclusively a woman's job whereas the tasks of supervising, maintenance, casing and manual labor are carried out by male employees.

Description of Operations

IN PRINCIPLE, with various minor modifications, the manufacture of cigars is similar in the three plants. Variations which are present, other than the sources of the tobacco, are in the preparation of the leaves for manufacturing. For the sake of brevity and simplicity the process to be described will relate to the largest plant, with interjectory remarks concerning the smaller plants, if any difference in the operation warrants an additional hazard.

The large plant, 10 stories above the ground and two stories below, is insulated with a two-inch cork lining. Every window in the building is stationary and double-sashed. An air-conditioning system with a change of air every four minutes maintained a constant temperature of 80° F, with a relative humidity of 70. The lighting is excellent; the building is well kept and very clean. Adequate and well kept locker rooms are maintained. Two large cafeterias are available and kept open during the working hours.

Select, ripened tobacco, processed and prepared, is obtained from the following sources:

1. "Filler" tobacco—the body of the cigar which constitutes the greatest percentage of the cigar is obtained from Havana, Puerto-Rico, Pennsylvania, and Ohio.

2. "Binder" tobacco—the leaf that binds the filler is obtained from Connecticut and Wisconsin.

3. "Wrapper" leaf—the outside or visible leaf comes from Connecticut, Florida and Georgia. Sumatra leaf is from the Dutch East Indies.

Two important processes are involved in the manufacturing of cigars, one, the actual manufacturing process, the other the manufacturing of weather. The purpose of the latter is to maintain in every step of the process the proper temperature and humidity. The prepared tobacco leaves are exceedingly hygroscopic and very sensitive to the minutest variations in the moisture content of the surrounding air. The moisture affects the leaves both physically and chemically, this being the most important factor in the preparation and manufacturing of cigars. If the leaves are too dry or brittle they break very easily, if too moist they tear and stretch. When the leaves are too dry or moist they undergo detrimental chemical changes, mold and decompose, and lose their flavor and aroma. Machinery located on the ninth floor and in the basement distributed washed air throughout the entire building at exactly the proper temperature and humidity as needed for the particular process.

The tobacco arrives at the plants in bales or cases. Havana tobacco from Cuba always arrives in bales. The preliminary operation in the conditioning of tobacco is called "casing." In one plant the tobacco was fumigated with a special potassium cyanide process prior to casing. This procedure was carried out by a licensed fumigating company.

The "hands" (a bundle of 25 to 40 leaves tied at the stems) are conditioned by one of several methods depending upon the tobacco:

1. The tobacco is sprayed with a fine stream of water and placed in specially lined wooden crates.

2. The hands are dipped into water and placed on trays.

3. In the largest plant, casing the wrapper consists of placing the hands on a "casing machine" in a large room in which the temperature is maintained at 70° F, with a relative humidity of 99. The hands of tobacco are slowly revolved on the machine. Since the tobacco is hygroscopic it absorbs moisture from the surrounding air. The tobacco remains here for approximately nine hours. These first two operations are manual and require the employee to wear protective clothing such as rubber boots and aprons.

Following the casing process the wrappers and binders are placed in cases and sent to the "sweat house." The leaves remain here in a temperature of 126° F and a relative humidity of 68 for a period ranging from 10 days to three months depending upon the leaf and the nature of the tobacco.

"Stripping" follows. This is a mechanical operation in which the center stem is removed. As this is done, each half leaf revolves on a roller, and after a sufficient number have been stripped the operator removes them and "books" them into separate piles of right and left halves. This is a most important step, for only the smooth, unveined top side of the leaf is used as a wrapper. All the tobacco—filler, binder, and wrapper—is subjected to this operation.

The leaves are now sent to the drying room. The half leaves are placed on racks at one end of a large, long room wherein a temperature of 120° F and a relative humidity of 80 are maintained. The racks move mechanically by stages through gradually lessening temperatures to the other end of the room where the temperature is 80° F and the humidity is 40. This entire process requires 24 hours. Aside from the heat, a

pronounced and penetrating odor of ammonia is present in the initial phase of the operation. The mechanical process is such that the workers are not subjected to this high concentration of ammonia and the torrid heat.

The tobacco is then sent to the "binning department" where it is stored in open bins. Each type of tobacco is stored in its respective section. Here, as in all other departments, the temperature and humidity are maintained as needed. This completes the preparatory process and the tobacco is now ready for the actual manufacture.

Two types of cigars are manufactured: (1) the short filler cigar, and (2) the long filler cigar. In the former the tobacco is cut into small pieces and in the latter the whole half leaf is used as the filler. A "threshing machine" was being used in one plant to remove the stems and cut the tobacco.

Four women are assigned to each long filler machine and two to each short filler machine. A blend of various filler tobaccos is placed in a perforated tray by the first girl. The fine tobacco dust is removed by suction. The leaves are then pushed into a small trough. Automatically enough tobacco to make one cigar is picked up, the ends cut off and the tobacco rolled into shape. Meanwhile a second girl spreads out over an aluminum die a single half-leaf binder which is picked up by a suction plate on a movable arm and carried over to a rubber apron, where it binds the rolled filler. The third girl spreads out a single wrapper on a similar die and another movable arm picks up the leaf, passes it over the gum tragacanth paste, and then envelopes the cigar. The cigar is picked by another movable arm, is perforated at the one end, is released, and rolls down into a tray. Finally the cigar is handled by the fourth girl, the "examiner." It is inspected, and if any defects are found, it is discarded or the minor adjustments are made. Gum tragacanth paste is used as the adhesive in the repairing of minor defects. This is kept in a small cup and is applied with the fingers. Occasionally the paste is used by the wrapper layer girl for attaching several pieces of tobacco together. The paste remains on the hands of the examiner much of the time. The cigars are then counted and placed in layers on a wooden tray.

By a conveyor system the loose cigars are sent to the inspecting department where they are assorted according to shade and color, then pressed into "shells." For further processing the shells are placed in a "humidor" for 48 to 72 hours. Each cigar is again inspected and then placed on a conveyor belt for banding and cellophaning. One machine performs both operations, and the girl attendant packs the cigars into a box and drives one nail into the lid. She then places the boxes on another conveyor belt enroute for final inspection. The nail in the lid is removed and the cigars are examined for shade, color, wrapping and banding. The lid is nailed down and by conveyor belt the boxes are taken to the stamping department where the tax stamp is placed on each. Finally the boxes are received in the shipping department where they are placed in large paper boxes and made ready for shipment.

The "cuttings" and unused tobacco are placed in a large dryer at a temperature of 140° F for 22 minutes. They are then placed in cartons and sold. This tobacco may be used as pipe tobacco or chewing tobacco, or may be reprocessed and used in the short filler cigars.

Medical Facilities

THE largest plant maintains a well equipped, well kept and adequately staffed dispensary. Private examining and sleeping rooms are maintained, with all the necessary equipment for emergency purposes. Two physicians, three full-time nurses and a technician are in attendance during the working hours.

All applicants for employment must pass a physical examination before they are accepted for employment, and must undergo periodic physical examination thereafter. A routine x-ray examination and a serologic test for syphilis are taken on every prospective employee.

Approximately 3% of all the serologic tests for syphilic are found to be positive. This is considered by many to be average for the general population. All those having a positive serologic test for syphilis are reported to the Venereal Disease Division of the City Deparment of Health. The cases are then referred to the City clinics or to the family physician for evaluation and therapy. A follow-up is obtained on each case, thus making certain that it has been adequately treated or evaluated. Infectious cases are not permitted to work, nor will they be employed until adequately treated.

Those who have sustained injuries while at work are treated, and are followed in the dispensary. Serious injuries are given emergency treatment and hospitalized if necessary.

All medical cases are given emergency therapy in the dispensary during the working hours and then referred to the family doctor for management and care.

In the two other plants visited, one had a full-time nurse in attendance and a physician available if necessary. The other plant had a dispensary across the street available for any emergency. Pre-employment physical examinations, routine chest x-rays and serologic tests for syphilis were also done.

The plants inspected in this survey were non-unionized shops. In the few smaller factories where contracts between management and labor existed, the following health provisions were noted in the contracts:

1. Company shall provide such sanitary toilet facilities, drinking fountains, locker and wash room facilities for the use of its employees as the regulations enacted by the state of Pennsylvania may require.

2. Company agrees to provide Workmen's Compensation Insurance as required by Pennsylvania

State Law. The company's present practice of providing for the safety and health of its employees while at work shall be continued during the period of this agreement.

3. Union agrees that it will encourage its members to work safely and to cooperate to the fullest extent with the company.

Dermatological Hazards

DERMATITIS among tobacco workers due to hypersensitivity to the tobacco leaf has been infrequently observed. Schwartz, Tulipan and Peck[4] emphasize the rarity of hypersensitivity to tobacco among tobacco workers.

Franchi[5] observed an erythematous-vesicular eruption of the hands in 60 workers in a cigar factory. Although the lesions were more commonly seen in the interdigital areas, the palmar aspects of the fingers, the palms, and rarely the forearms were involved. Cultures, bacteriological studies, patch tests to the tobacco and paste (starch, alum, flour) were negative. Repeated patch tests over the sites of the dermatoses were negative. A mixture of macerated tobacco and the paste, which was permitted to "ferment" for 24 hours, when tested on the back and forearms gave negative results; however, positive patch tests were obtained when the test was done near the site of the eruption. A change in the pH from the alkaline to acid side was noted when the macerated tobacco leaf was added to the paste and permitted to stand for some time. Incorrect wiping of the hands allowing the gum and macerated tobacco leaves to remain between the fingers, plus continuous maceration, was considered an important factor in the cause of the dermatitis.

Genovese[6] in an observation made over a period of 25 years states that the dermatoses encountered among cigar workers were due to infections, injuries and chemicals rather than to hypersensitivity to tobacco. Vero and Genovese[6] reported three cases of hypersensitivity to tobacco in cigar makers. Positive patch tests were obtained to both filler and wrapper in one case, and to the filler in the two other cases. Microscopic and cultural examinations for fungi were done on two cases and the paste with negative results. Various factors were considered to determine the exact nature of the irritant producing the dermatitis. The possibility of an insecticide was considered, and this was incorporated in the patch testing with negative results.

In 1940 a group of hand eruptions first began to appear in the largest plant. The eruptions were characterized by dryness and fissuring, usually involving the thumb, index and middle fingers on the palmar and lateral aspects. The right hand was usually more frequently involved than the left. The degree of severity varied; in the more severe cases, erythema, edema, pain, vesicles and exudation were present and often the other fingers and occasionally the palms would be involved. The greatest number of cases were seen among the examiners and occasionally among the wrapper-layer girls. More often the eruptions were of a very mild nature, never requiring hospitalization and only rarely necessitating absence from work.

With the advent of the hand eruptions in 1940 every effort was made to determine the nature or mechanism of the causative agent. Since a small percentage of the examiners was affected, a sensitizer was considered as the probable etiologic agent. Numerous patch tests were performed in order to elicit the nature of the contactants. On every case of dermatitis the following patch tests were carried out: (1) the various tobacco leaves; (2) gum tragacanth paste; (3) gum tragacanth paste plus tobacco; (4) gum tragacanth paste plus tobacco plus rotenone.

Only three employees showed positive patch tests. In each instance, tobacco was indicated. Of the three cases, one was positive only to the Pennsylvania leaf. All three were able however, to continue work with impunity—the eruptions appearing sporadically without any incapacitating effect upon the worker.

Since their inception, the hand eruptions appeared to be of a seasonal nature. A definite rise in the incidence became apparent in November, and increases with slight fluctuations continued through and included the month of March. Thereafter there was a marked decline which was generally maintained until the following November. During this summer period occasional cases of a mild nature were seen and at times the incidence was negligible.

The greatest number of cases occurred during 1942, at which time some 315 cases were reported. In contrast, only 26 cases were seen during the entire year of 1944. During the past nine years approximately 1065 cases have been reported; approximately 80% were of a mild nature, 19% had moderate involvement, and only 1% were of the severe type. Taking 1947 as an average year, the hand eruptions constituted less than 0.04% of all patient visits to the Dispensary.

	1942	1943	1944	1945	1946	1947	1948
January	59	17	2	16	20	11	20
February	20	31	0	5	2	14	17
March	20	31	0	5	2	14	17
April	17	20	1	6	13	17	10
May	14	10	3	2	5	16	8
June	22	9	2	5	4	10	10
July	22	7	1	5	3	5	8
August	23	5	1	0	3	7	4
September	22	9	1	1	3	6	4
October	24	22	3	2	4	4	1
November	27	16	1	0	3	15	7
December	28	15	2	9	14	18	16

Our investigation led us to believe that the eczematous dermatitis of the fingers and hands presented by these examiners was not due to sensitization—as indicated also by the negative patch tests. Observing the women at their jobs led us to conclude that these eczematous eruptions were produced by the synergistic action of constant wetness of the hands plus the alkaline reaction of the towelling which the examiners constantly used as part of their work.

Estimation of the pH of the hands of the affected employees ranged from 8.2 to 8.5. The method for determining the pH was with an indicator system, and, although this form of testing is not as accurate as may have been determined with the use of the glass electrode method, the findings indicated an abnormal state of alkalinity of the skin of the hands.

The determination of the pH of the towelling with which the examiners were constantly wiping their hands, was accurately determined with a potentiometer. The readings (average) were:

	2 hours	24 hours	48 hours
Used wet towel (in distilled water)	6.83	7.69	7.51
Clean towel (in distilled water)	6.81	7.88	7.58

The pH of various samples of the tragacanth paste ranged between 6.49 and 7.35.

A group (10) with active dermatitis was repatch-tested with the towelling and the paste. Tests were interpreted as negative after 48 and 72 hour readings.

From these findings it was hypothesized that this alkaline medium to which these workers were exposed in addition to the prolonged and constant exposure to wetness lessened the alkali neutralizing capacity of the skin and thus favored the tendency towards eczematization which was provoked both by the keratin solvent and degreasing actions of alkalies and the maceration produced by wetness.

In contrast, in one of the smaller plants where no such instances of dermatitis occurred, two modifications in technic were observed. This plant provided a tragacanth paste in which boric acid was incorporated and paper towels were provided for the workers. These examiners wiped their hands on a paper towel which was then discarded whereas the affected workers in the large plant used the same towel throughout the work week.

There was no conclusive evidence to explain the seasonal fluctuations of dermatitis. It was conjectured that exposure to the winter air outside of the working environment may have been the exciting factor.

In addition to these eczematous dermatitides, injuries to the skin were not infrequently seen. Lacerations and abrasions were noted among the laborers and the machine operators. Contusions were more frequent among the laborers. Puncture wounds of various types were only infrequent. Injuries from the tobacco stem occurred among the "strippers"; nails were occasionally the cause of puncture wounds among the laborers. In the machine shop, the only skin eruption seen was a rare oil folliculitis. None ever caused any lost time, and separation from the irritant and mild ointments cleared them promptly.

Other hazards are dust, and the smell of tobacco throughout the general factory.

DUST: This has been analyzed to be 60% tobacco dust and 40% inert dust, and the average atmosphere on all the floors except one area of the binning floor contains 48,000 particles per cubic foot. The only exception is the baling room during the baling process, when the dust becomes a "cloud" at that time only. One of the authors (C.-F. L.) has demonstrated in a previous communication the fact that tobacco dust does not lead to pulmonary disease nor any type of pulmonary disability.[7]

THE SMELL OF TOBACCO: Twenty years of experience in dealing with employees in a large cigar factory have shown that roughly one in every 1,000 persons is susceptible to the smell of tobacco. Within the first 24 hours of work, or at latest the first 48 hours, the employee will become nauseated and will vomit. This will continue as long as exposure to the smell of tobacco continues. Various types of treatment have been tried, and it has been found that 10 drops of tincture of belladonna will relieve a very few employees. The great majority have had to be told frankly that they are unable to tolerate the smell of tobacco and will do themselves and the industry a favor by seeking a job elsewhere.

Summary

MECHANIZATION has changed cigar manufacturing from a man's to a woman's industry and has reduced the number of employees.

2. It is estimated that 90% of all cigars are made by machines.

3. Dermatitis among tobacco workers due to hypersensitivity to the tobacco leaf is infrequently observed. This is confirmed by repeatedly negative patch tests.

4. Over a nine-year period, 1941-49 inclusively, 1065 cases of hand eruptions are reported in one large plant.

5. The eruptions were characterized by dryness and fissuring; occasionally by erythema, edema and vesicles. The greatest number of cases were seen among the "examiners," and occasionally among the wrapper layer girls.

6. Hand eruptions appeared to be seasonal in nature, a definite rise occurred in November and continued through and including March.

7. Hand eruptions constituted less than 0.04% of all patient visits to the dispensary.

8. Analysis of the dust on all the floors showed 60% tobacco dust and 40% inert dust, containing 48,000 particles per cubic feet.

9. A detailed description of the cigar manufacturing process is given.

10. The medical facilities and the dermatological hazards in the industry are reported.

Conclusion

WE HAVE presented evidence that the hand eruptions found among the tobacco workers were not due to sensitization as indicated by repeatedly negative patch tests. The pH determinations revealed an abnormal state of alkalinity of the hands of the examiners and the towelling they used. From these findings it was hypothesized that the alkaline medium in addition

to the prolonged and constant exposure to wetness lessened the alkali neutralizing capacity of the skin. This factor plus the keratin solvent and degreasing action of the alkalies and the maceration produced by wetness favored the formation of the dermatitis.

2. Tobacco dust does not lead to pulmonary or dermatological diseases.

3. Roughly one per thousand persons is susceptible to the smell of tobacco. Nausea and vomiting are noted within the first 24 to 48 hours.

(9th St. and Columbia Ave., Philadelphia 22.)

References

1. Annual Report of the Commissioner of Internal Revenue, Fiscal Year Ended June 30, 1948, and prior years.

2. *Monthly Labor Review*, July 1941: "Hand and Machine Production of Cigars in 1940."

3. Bureau of Labor Statistics, U.S. Department of Labor: Census of Manufacturers, 1947.

4. SCHWARTZ, L., TULIPAN, L., and PECK, S. M.: Occupational Diseases of the Skin. Philadelphia, Lea & Febiger, 1947.

5. FRANCHI, F.: Dermatite professionale delle sigaraie. *Gior. ital. di dermat. e sif.*, 78:475 (June) 1937.

6. VERO, F., and GENOVESE, S.: Occupational dermatitis in Cigar Makers due to Contact with Tobacco leaves. *Arch. Derm. & Syph.*, 43:257 (Feb.) 1941.

7. LONG, CHARLES-FRANCIS: Tobacco Dust and the Human Lung. INDUSTRIAL MEDICINE, September, 1939.

Steel Plant in South Africa

THE PLANT (Iscor Works for short) employs 5000 natives and 2500 Europeans. They have an output of 600,000 tons a year in this unit and expect a million tons a years at a new mill nearby now in process of construction. The steel plant, the only one in South Africa, does not begin to supply the needs of the colony—only about 40%—the rest has to be imported. There is plenty of coal, right at their doorstep; nearby also is iron, of excellent quality, and in vast abundance, enough for 1000 years; manganese, dolomite, and quartzite all are available within a few miles; nothing needs to be shipped in. There is plenty of native labor, all good....The plant has a union, which, however, is content with what management is doing for the men and cooperates completely with the medical department. Most of the men work a 42-hour week—some a 48-hour week—they get a good bonus based on production over a basic point. The wage rate is, of course, very much lower than ours but so are costs and expenses. A master roller, for instance, gets about $40 a week (42 hours); a crane operator over the soaking gets about $35 for a 48-hour week. No nurses are used now as they proved to be very much of a problem during the war; instead the medical department uses carefully trained first aid men. They have a 52-bed hospital for the natives on the grounds, but there are seldom more than three or four medical cases in it, only injuries. The men get excellent care. A full-time medical man is in charge of this hospital, which is located across the road from the native compound. This compound is really something—a great tract of land, beautifully gardened with large, grassy plots. Men off the day shift were sprawled in the grass drowsing or talking. The dormitory rooms were like motels, in long low buildings surrounding the compound—a big bath house, a kitchen where men were just then receiving their food which consisted of a *huge* tin plate full of "mealie" (whitish corn) and yellowish mush, meat soup, and a fermented native drink, "Mahow," which they carried off in dinner pails. All the food was piping hot and clean, though cooked in great quantity. Native radio programs and music are piped in. The men get three square meals, sunshine, freedom to come and go and actually live much better than many of the high-wage workers in Indiana Harbor, East Chicago, and Gary. The major surgical cases and all the Europeans go into the hospital in Pretoria proper. Workmen's compensation is excellent, the company going much further than the official demands. The accident rate is high, 1500 accidents a month in a plant of 7500 men (in South Africa *all* trivial accidents are reported and the "lost time" racket is non-existent). Most of the workers are farmers who never saw a machine before they came here. A medical benefit fund is set up for everyone from the top man down which covers *everything*—hospital, medical care, surgery, dentists—both for the worker and his family. Payment into the fund is on a sliding scale and percentage of wage; the general manager pays $5 a month, while the lower wage earner pays $1.50 a month. The corporation then matches this pound for pound. Cases are taken care of by a panel of 40 doctors, all carefully chosen and passed on by the corporation which is planning to build a staff of permanent medical men, sufficiently large so workers can still have free choice. The doctors are paid a beginning salary of $6,000 a year, have the use of a car, a consultation room, and equipment.

—From "An African Adventure, 1949," by HUGH A. KUHN, M.D., and HEDWIG S. KUHN, M.D.

Peripheral Vascular Disease
—Recent Advances in Diagnosis and Treatment—

FRANK V. THEIS, M.D.,
Department of Surgery, Presbyterian and Cook County Hospitals and the University of Illinois College of Medicine, (Rush),
Chicago

THE encouraging progress that has been made in the diagnosis and in the treatment of peripheral vascular diseases is due largely to studies of the pathologic, biochemical, and physiologic processes that contribute to the arterial diseases. These studies have not advanced far enough to explain entirely the clinical and pathologic findings but they have provided more accurate means for diagnosis and for evaluation of the results of treatment. The presence and significance of certain pathologic blood findings in atherosclerosis, arteriosclerosis, and thrombo-angiitis obliterans and of the vasoconstrictor factor in occlusive arterial disease have been recognized only recently. The purpose of this report is to present the results of personal observations and investigations which have proved of practical value in the diagnosis and treatment of some of the common arterial diseases.

Diagnosis of Peripheral Arterial Disease

ARTERIAL disease may occur at any time from infancy to old age[1] but serious symptoms are rarely produced until an obstructing lesion interferes with the peripheral circulation. The severity of the symptoms due to circulatory deficiency will depend upon the site, extent, completeness, and suddenness of the occlusion in the main artery, arterioles, and capillaries. Except in the advanced stage of organic occlusion, a variable amount of arterial spasm increases further the severity of the circulatory deficiency. The skin temperature response to reflex heat (electric pad to the abdomen—medium heat), sympatholytic drugs, and sympathetic nerve block readily differentiates the vasoconstriction component from the organic occlusion.[2]

Oscillometric and stabilized skin temperature readings are used to determine the location, extent, and completeness of arterial occlusion and the severity of the circulatory deficiency. The oscillometric readings indicate the muscle tone and the degree of patency or obstruction of the main artery. Under stabilized conditions the temperature of the skin is maintained by the amount of arteriolar and capillary circulation and by the environmental temperatures. Low skin temperatures indicate vasoconstriction or organic occlusion. When only one limb is involved the skin temperature can be compared with that of the other. Not infrequently the uninvolved limb is colder than the involved one due to greater vasoconstriction. However, the better of the two extremities will become warmer following the tests for vasodilatation. To produce vasodilatation in the extremities, heat to the abdomen is used first but if it is ineffective in producing normal skin temperatures, then tetraethyl-ammonium chloride is used. If this, too, is ineffective, sympathetic nerve block is done. Failure to obtain vasodilatation demonstrates that spasm is not a contributing factor in the disease.

When the presence of occlusive arterial disease has been established, further examination is required to determine the cause of the occlusion which is usually due to atherosclerosis, arteriosclerosis, thrombo-angiitis obliterans, thrombosis, or embolism. As a rule, atherosclerosis and thrombo-angiitis obliterans cannot be diagnosed by the age of the patient alone. Extensive atherosclerosis and arteriosclerosis are observed in adults around 40 years of age. Buerger's original descriptions and illustrations of the pathology of thrombo-angiitis obliterans show areas of atherosclerosis and arteriosclerosis.[3] Syphilitic arteritis and arterial aneurysms may lead to thrombosis which may be mistaken clinically for thrombo-angiitis obliterans.

Pathologic blood changes have provided a basis for differentiating atherosclerosis and arteriosclerosis from thrombo-angiitis obliterans. These conditions account for the great majority of cases of occlusive arterial disease. In adult and

Fig. 1.
Subintimal atheroma of the iliac artery almost completely occluding the lumen. Degenerative changes in the atheroma may lead to intimal damage and to complete thrombotic occlusion of the remaining lumen

Presented at the Sixty-First Annual Meeting of the AMERICAN ASSOCIATION OF RAILWAY SURGEONS, Chicago, July 1, 1949.

middle-aged individuals high blood cholesterol levels are indicative of atherosclerosis, the early stage of arteriosclerosis. In some cases the artery may be occluded partially or almost completely by subintimal deposition of cholesterol from the blood (Fig. 1). Leary[4] observed experimentally that the atheromata may be increased or absorbed due to fluctuation in the blood cholesterol level. Atheromata may be considered storage depots for cholesterol and when absorbed owing to lowered blood cholesterol, the patency of a previously obstructed artery may be restored. Degeneration of the atheroma may lead to hemorrhage within the lesion, to necrosis of the intima with thrombosis of the vessel, or to replacement by calcium. In senile individuals with low cholesterol level the degree of arteriosclerosis may be minimal. Recently a patient aged 86 years who had a low blood cholesterol level and minimal x-ray finding of arteriosclerosis was found at autopsy to have very little sclerosis. On the other hand, a patient aged 43 years who had a high cholesterol level and who had been diagnosed clinically for 15 years as thrombo-angiitis obliterans was found at autopsy to have an extreme degree of atherosclerosis and arteriosclerosis. The level of blood cholesterol at which subendothelial atheromatous deposits occur in different individuals depends, no doubt, upon factors which are unrecognized today.

Thrombo-angiitis obliterans has been an enigma to the medical profession and the diagnosis is made frequently without considering the accepted criteria of the disease. Various causative factors have been ascribed to the disease which have not been verified by subsequent investigations. Our interest has been directed to changes in the blood, some of which were first noted by Koga[5] in 1913. The results of some of our investigations have been reported.[6] The disease occurs in an active or acute stage in which the blood findings are abnormal and in an inactive stage in which the blood findings are normal. In the acute stage the most consistent pathologic change is a markedly reduced oxygen saturation of the arterial blood.[7] Three recent acute cases had initial arterial oxygen saturation from 65 to 78% (Table 1). There was no cyanosis or other evidence of oxygen deficiency. The diagnosis was confirmed by biopsy of superficial thrombosed veins (Fig. 2). Intravenous injection of sodium tetrathionate was followed by rapid return of normal oxygen saturation of 96 to 98% and this was accompanied by marked clinical improvement. Initial rapid clotting and sedimentation rate also returned to normal. The blood cholesterol level was consistently low but still within the accepted normal levels; one patient had 257 mgm. per cent while almost all others were below 200 mgm. per cent.

TABLE 1.
THROMBO-ANGIITIS OBLITERANS. RADIAL ARTERY BLOOD OXYGENATION AND TOTAL CHOLESTEROL CONTENT

	Oxygen Capacity	Oxygen Sat'n.	Total Cholesterol
Mr. W. E., aged 33. Femoral artery occlusion.			
3-11-49—Initial.			
Before treatment	17.3	65.4	209
After 0.6 gm. sodium tetrathionate	17.3	86.5	—
4-4-49—After 3 injections weekly	18.1	93.8	—
5-21-49—Left lumbar sympathectomy.			
Postoperative. No injections	16.8	80.6	161
6-21-49—			
Postoperative. No injections	17.5	93.0	150
Mr. F. T., aged 25. Tibial artery occlusion.			
1-11-49—Initial.			
Before treatment	19.3	78.3	133
After 0.6 gm. sodium tetrathionate	19.3	97.9	—
2-3-49—			
After 4 injections weekly	19.6	98.7	—
4-4-49—			
After 3 injections weekly	20.0	93.7	—
5-27-49—			
After 3 injections weekly	19.4	94.4	126
Mr. G. R., aged 43. Femoral artery occlusion.			
12-11-49—Initial.			
Before treatment	24.7	76.9	205
After 0.4 gm. sod. tetrathionate	24.7	91.1	—
12-23-48—			
Daily injections	25.1	96.8	—
2-10-49—			
After 3 injections weekly	21.8	97.1	—
4-4-49—			
After 2 injections weekly	17.3	93.9	—
5-23-49—			
5 injections since 4-4-49	19.7	93.2	212

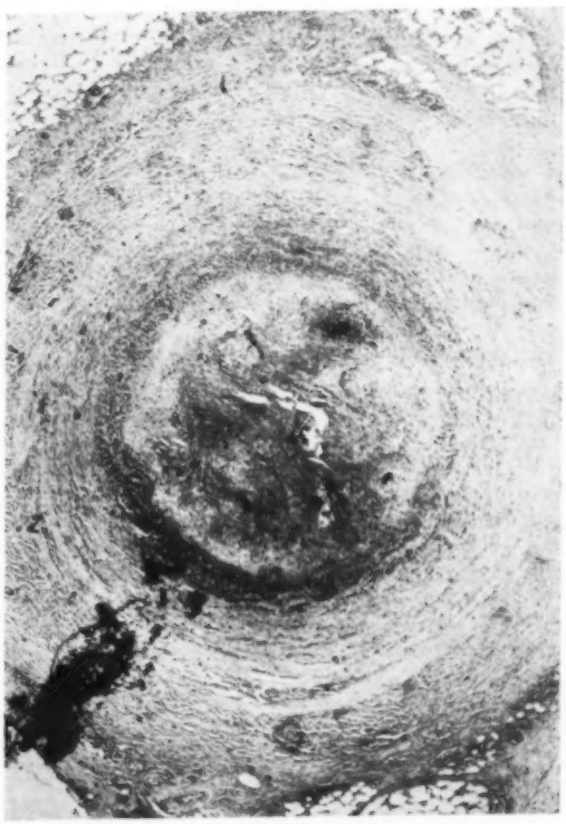


Fig. 2.
Biopsy of migrating thrombophlebitis of internal saphenous vein from patient with thrombo-angiitis obliterations (Table I—Case 1). The lumen is filled with an organizing clot, cellular infiltration extending through media and adventitia and giant cells are present in the periphery of the clot

Fig. 3.
Surgical specimen of resected thrombosed saccular popliteal aneurysm. Laminated clot fills the aneurysmal sac and a small lumen is still present

Arterial aneurysms occur most frequently in the popliteal artery and are likely to be symptomless (1) until thrombosis occurs in the sac and artery, (2) until the sac becomes large enough to produce pressure on adjacent nerves or other tissues, or (3) until the sac ruptures. This condition is more common than is generally realized; within one month four bilateral popliteal aneurysms have been diagnosed and confirmed at operation. Gages,[8] in a recent report, confirmed our previous observations and reports that thrombosed arterial aneurysms may be confused with thrombo-angiitis obliterans. Oscillometric readings are pathognomonic for arterial aneurysms[9] unless the sac and artery are completely thrombosed (Fig. 3); the weakening and stretching of the sac causes localized increased oscillations (Fig. 4). Arteriograms are rarely of diagnostic value since the sac is occluded almost always, at least partially, by a thrombus and only a fine stream of the opaque medium may be seen in the patent area. It should be kept in mind that arterial aneurysms occur most frequently in the popliteal artery and are frequently bilateral, that the oscillometric curve is pathognomonic and that forced flexion of the

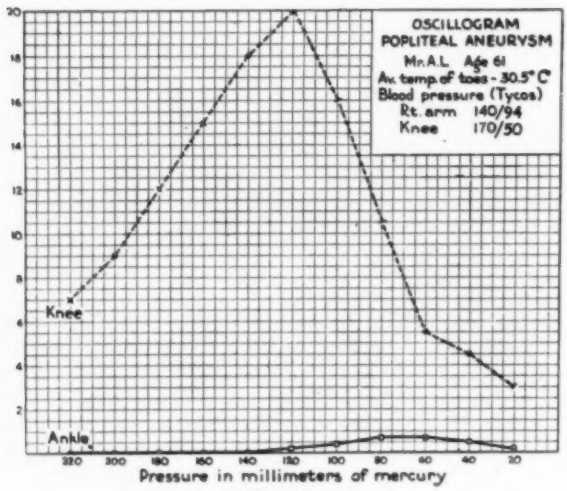


Fig. 4.
Pathognomonic oscillometric curve of a partially patent popliteal aneurysm. Markedly elevated oscillometric index is present at site of aneurysm; distal to site of aneurysm the oscillometric index is reduced

Fig. 5.
Medial or Monkeberg's sclerosis of wall of popliteal aneurysm

knee with violent muscular effort of the leg precipitates thrombosis and acute circulatory symptoms. Medial or Monkeberg's sclerosis, which may be detected on x-rays, is the underlying disease condition which most frequently weakens the artery (Fig. 5). The aneurysm may be saccular or fusiform in type; the former produces a local elevation in the oscillometric curve while the latter produces an elevated curve along a portion or the entire length of the vessel.

Treatment of Peripheral Vascular Disease

TREATMENT of occlusive arterial disease is directed primarily to increasing the peripheral collateral circulation and also to correcting the pathologic, biochemical, and physiologic changes which may be present. This requires thorough diagnostic study and follow-up, for clinical observations alone cannot be relied upon in deciding what treatment is indicated or what is being accomplished by treatment. The results obtained by an organization of personnel trained in this type of work would not be possible by the individual clinician. Even with the best facilities for clinical, biochemical, physiologic, bacteriologic, and scientific instrument studies, there is occasional uncertainty in diagnosis and disappointment in the results of treatment.

Conservative treatment is of greatest value in improving the collateral circulation when there is main artery occlusion with little or no vasoconstriction. Temporary relief from pain sometimes occurs within a few minutes but in order to restore normal skin temperatures, as an index of adequate collateral circulation, treatment for weeks or months may be required. Re-opening of the main artery, as shown by the return of oscillometric readings, suggests regressive changes in an atheromatous or thrombotic ob-

structive lesion which have restored, at least partially, the patency of the artery. Pavaex or alternating positive and negative pressure boot treatment[10] is the only conservative measure, in our experience, which has proved of definite value. To assure maximum benefit the treatments must provide adequate pressures for sufficient periods of time; one hour periods with maximum pressures of 100 mm. negative and 20 mm. positive pressure, repeated as often as five times daily, may be required to obtain the necessary results. Some of the beneficial effects of the Pavaex treatment may be due to increased oxygen and carbon dioxide exchange in the tissue resulting from the changing environmental pressures.[11] Other forms of conservative treatment are intermittent rhythmic venous occlusion,[12] Buerger-Allen exercises, and contrast (hot and cold) baths. We have observed no demonstrable clinical benefit when these procedures are used for increasing the collateral circulation in cases of complete and permanent occlusion of the main artery.

Temporary vasodilatation for relief of the vasoconstrictor component in cases of peripheral arterial embolism, thrombosis, traumatic arterial spasm, causalgia, and frostbite may be produced by sympatholytic drugs or paravertebral sympathetic blocks. The drugs, tetraethyl-ammonium chloride[13] and priscolene[14] are usually effective in producing temporary increased peripheral circulation but an occasional serious drop in blood pressure may increase further the peripheral circulatory deficiency and maximum vasodilatation is seldom produced. The so-called "borrowing-lending" hemodynamic phenomenon advanced recently by Ochsner[15] would mitigate the therapeutic value of sympatholytic drugs. Paravertebral sympathetic nerve block most consistently produces maximum peripheral vasodilatation. The short duration of the usual novacain block is objectionable and repeated blocks, especially in cases with cardiac conditions as the source of the emboli, are too disturbing for seriously ill patients. Substituting bromsalizol[16] for the novacain may be effective for a number of days instead of a few hours.

Surgical treatment of occlusive arterial disease is limited (1) to sympathectomy for improving the collateral circulation, (2) to embolectomy[17] for removing emboli from peripheral arteries, and (3) to resection of arterial aneurysms. Adequate sympathetic neurectomy removes permanently the central vasoconstriction control to the peripheral arteries, arterioles, and capillaries and eliminates sweating. The complete absence of sweating prevents the cooling effect of evaporation of skin moisture and the maceration of tissues which will decrease the danger of infection. When competently performed on selected patients, sympathectomy is a safe procedure and no mortality should result from the operation itself; however, technical difficulties are greater than one would expect from descriptions of the procedure. The most remarkable improvement followed sympathectomy on some patients who showed no pre-operative evidence in neurocirculatory tests that the circulation would be improved. Incomplete nerve resection is the principal cause for failure to obtain vasodilatation and sweating will still be present. A new instrument, the Neurodermometer,[18] can be used to locate the area of skin which has been denervated. Except in the hopeless cases of advanced organic arterial occlusion with atrophy, gangrene, and infection, when amputation is obviously necessary, patients should not be denied the possible improvement which may follow sympathectomy and which may save the limb.

Embolectomy, to be successful, must be done before extensive secondary or propagating thromboses and intimal damage have occurred. Following the arrest of an embolism at the bifurcation of a peripheral artery, superimposed spasm may occlude the vessel completely. This is evidenced by pain, coldness, pallor, or patchy cyanosis and, occasionally, paralysis. When paralysis occurs, attempts to save the limb are rarely successful. Papaverine hydrochloride[18] in ½ to 2 grain doses, given intravenously or intramuscularly, and sympathetic block will relieve the secondary spasm and reduce the seriousness of the circulatory deficiency. If no improvement is noted within eight hours, embolectomy should be attempted. Naturally, successful treatment depends upon the correctness of the diagnosis and the early removal of the embolism by a surgeon familiar with the principles of vascular surgery. Unfortunately, embolectomy is too frequently followed by extensive thrombosis and gangrene.

Chemical blood changes which are found in certain occlusive arterial diseases can be benefitted now by treatment. These include the elevated blood cholesterol level in atherosclerosis and arteriosclerosis, the low arterial blood oxygenation in thrombo-angiitis obliterans, and the blood coagulation factors in thrombosis and embolism. Correction of these factors will limit the progress of the disease and is usually accompanied by clinical improvement. In atherosclerosis and arteriosclerosis the elevated blood cholesterol level can be reduced occasionally by dietary restrictions in avoiding foods with high cholesterol contents, such as animal fats, eggs, cream, butter, sweetbreads, and fish. We have observed a patient who had a reduction of 130 mgm. per cent in the cholesterol level (from 620 to 490 mgm. per cent) during the period of postoperative convalescence following sympathectomy. This was attributed to dietary restrictions. However, reduction in blood fats is not usually accomplished so easily for an endogenous source of cholesterol may maintain high blood levels regardless of exogenous or dietary intake. Some of these patients respond to thyroid medication but this, too, is not uniformly successful. Irrespective of a normal metabolic rate, some thyroid replacement is frequently beneficial, at least sufficient dosage to raise and maintain a pulse rate of 80. Choline bicarbonate or choline dihydrogen citrate[20] has proved to be the most valuable lipo-

trophic preparation. The clinical improvement following their use is usually greater than would be expected from the actual reduction in the blood cholesterol level.

In the acute stage of thrombo-angiitis obliterans low arterial blood oxygenation is found consistently while in the inactive stage the blood findings are normal. Recurrence or progress of the disease seems to depend upon the continued presence or return of the pathologic blood findings but the entire clinical and pathologic picture of the disease is not accounted for completely by the results of our investigations. However, clinical improvement or recovery follows the intravenous injections of sodium thiosulfate and/or sodium tetrathionate and this is associated with return of normal arterial blood oxygenation, clotting time, and sedimentation rate. No other treatment is given for the blood changes and very few of the patients are hospitalized or stop smoking despite our warning that smoking must be discontinued completely and permanently. Recurrences may occur unless the injections are continued for months. For the peripheral circulatory deficiency due to the thrombotic arterial occlusion conservative Pavaex treatment, sympathetic neurectomy, or both may be required to produce maximum collateral circulation in the extremity.

Anticoagulant therapy is of definite value in cases of embolism or thrombosis of the peripheral arteries and of frostbite of the extremities. Secondary thrombosis of the occluded arteries or arterioles and of the intracardiac thrombus, which is the usual source of emboli, can be limited or prevented by effective anticoagulant therapy. It has been shown that 85% of peripheral arterial emboli come from an intracardiac thrombus while the remainder arise from a thrombus on an atheromatous plaque on the abdominal aorta or from a venous embolism passing through a congenital cardiac septal defect. Intermittent heparin injections of 50 to 100 mgm. every four hours for 48 hours and effective dicumarol therapy thereafter will prevent further clotting but the dangers incident to dicumarol therapy must be recognized. Dicumarol therapy may be difficult to control even with reliable laboratory facilities for prothrombin determinations. There is a real danger of concealed hemorrhage even when dicumarol is administered under the best conditions. Acute frostbite is being treated now with anticoagulants and the results we have observed have been very encouraging.

Infection of an extremity which has poor circulation is a serious complication and may be difficult to control. In all cases of peripheral arterial occlusion every precaution must be taken to avoid injury and infection of the skin by proper hygienic care. When necrosis or gangrene is impending or has occurred already, surgical asepsis and dressings should protect the skin. Local applications of hypertonic magnesium sulfate solution (25%) to the site of infection will promote drainage and still avoid macerating the tissues. The slightest evidence of infection calls for the administration of antibiotics; with penicillin, streptomycin, aureomycin, and chloromycetin to choose from, cultures and in vitro sensitivity tests will aid in the choice of the most effective one to use. Because of the inadequacy of the circulation, sufficient concentration of the drug may not reach the site of the infection. Inability to control the infection may result in rapid spread of the gangrenous process and in serious septicemia or pyemia; this is the most frequent indication for amputation.

Refrigeration of an infected gangrenous extremity is no longer used for its anesthetic effect for surgery but is of particular value in controlling infection and reducing toxic absorption for a few days or weeks until the patient can be adequately prepared for amputation. After a few hours of refrigeration, the limb as well as the general condition of the patient may improve so favorably that one may be inclined to reverse the decision to amputate; however, at this point there is no turning back to attempt to save the limb. Refrigeration is best accomplished by placing six to eight ordinary ice bags around the previously sterile preparation of the limb and covering with rubber sheeting and blankets to prevent loss of refrigeration. This will reduce the skin temperature to 4°C. The first application of ice bags will require replacement in about two hours and thereafter every four hours. This procedure requires less nursing care and is far more satisfactory than packing the limb in ice. Rapid relief from pain, reduction in fever and pulse rate, disappearance of foul odor, improvement in cardiac condition, and control of diabetes is usually most striking. No deaths from major or minor amputations have occurred on my service at the Presbyterian Hospital since 1936 and there has been only one death, three months after amputation, on my service at the Cook County Hospital.

Summary and Conclusions

ACCURATE diagnosis of the cause of peripheral arterial occlusion is essential for appropriate and successful treatment.

Correlating clinical, physiologic, biochemical, bacteriologic, and special instrument studies will provide a scientific basis for diagnosis and for treatment otherwise impossible to obtain.

Conservative treatment is of great value but clinical observations alone are inadequate to evaluate the effectiveness of treatment and the progress of improvements.

Sympathectomy permanently removes peripheral vasoconstriction and hidrosis; marked clinical improvement may frequently follow operation despite pre-operative evidence that improvement was not to be expected.

Bibliography

1. FIELD, M. H.: Medial Calcification of Arteries of Infants. *Arch. Path.*, 42:607-618 (Dec.) 1946. COWDRY, EDMUND V.: Arteriosclerosis: A Survey of the Problem. The MacMillan Company, New York, 1933.

2. DE TAKETS, G., and EVAY, M. H.: Sympathectomy for Peripheral Vascular Sclerosis. *J.A.M.A.*, 133:441-444 (Feb. 15) 1949. OSCHNER, A.: Discussion. *J.A.M.A.*, 133:444 (Feb. 15) 1949.

3. BUERGER, L.: The Circulatory Disturbances of the Extremities, Philadelphia. W. B. Saunders Company, 1924.

4. LEARY, T.: Atherosclerosis: The Important Form of Arteriosclerosis, a Metabolic Disease. Proceedings of the Institute of Medicine of Chicago, 10:289-300 (June 15) 1935.

5. KOGA, G.: The Treatment of Spontaneous Gangrene of the Extremities. *Deutsche Ztschr. f. Chir.*, 121:371-382, 1913.

6. THEIS, F. V., and FREELAND, M. R.: The Blood in Thrombo-angiitis Obliterans. *Arch. Surg.*, 38:191-205 (Feb.) 1939. THEIS, F. V.: Thrombo-angiitis Obliterans: Clinical Observations and Arterial Blood Oxygen Studies During Treatment of the Disease with Sodium Tetrathionate and Sodium Thiosulfate. *Surgery*, 11:101-117 (Jan.) 1942. THEIS, F. V.: Smoking and Thrombo-angiitis Obliterans. *Ann. Surg.*, 113:411-423 (Mar.) 1941.

7. THEIS, F. V.: Thrombo-angiitis Obliterans: Treatment with Sodium Tetrathionate and Sodium Thiosulfate. *Arch. Surg.*, 40: 190-207 (Feb.) 1940.

8. GAGES, M.: Traumatic Arterial Aneurysms of the Peripheral Arteries. *Am. J. Surg.*, 59:210-231 (Feb.) 1943.

9. THEIS, F. V.: Popliteal Aneurysms as a Cause of Peripheral Circulatory Disease: With Special Study of Oscillomographs as an Aid to Diagnosis. *Surgery*, 2:327-342 (Sept.) 1937. THEIS, F. V.: Peripheral Arterial Aneurysm: Diagnosis, Prognosis and Treatment. *International Clinics*, 11:205-216, 1940.

10. HERMANNS, LOUIS: Passive Vascular Exercises and Conservative Management of Obliterative Arterial Diseases of the Extremities. Philadelphia, J. B. Lippincott Company, 1936.

11. THEIS, F. V.: Peripheral Circulatory Diseases. *J.A.M.A.*, 107:1097-1104 (Oct.) 1936.

12. COLLENS, W. S., and WILENSKY, N. D.: The Treatment of Peripheral Obliterative Arterial Diseases. *J.A.M.A.*, 107:1960-1965 (Dec. 12) 1936.

13. BERRY, R. L., CAMPBELL, K. N., LYONS, R. H., MOE, G. K., and SUTLER, M. L.: The Use of Tetraethyl-Ammonium in Peripheral Vascular Disease and Causalgic States: New Method for Producing Blockade of Autonomic Ganglia. *Surgery*, 20:525-535, 1946. COLLER, F. A., CAMPBELL, K. N., BERRY, R. E. L., SUDLER, M. R., LYONS, R. H., and MOE, G. K.: Tetraethyl-Ammonium as an Adjunct in the Treatment of Peripheral Vascular Disease and other Painful States. *Ann. Surg.*, 125:729-755, 1947. MCINTYRE, C. H., MARSH, R. L., and BRIGGS, J. D.: Tetraethyl-Ammonium Chloride in Evaluation of Lower Extremity Arterial Disorders. *Surgery*, 25:348-351 (March) 1949.

14. GRIMSON, K. S., REARDON, M. J., MARZONI, and HENRIX, J. P.: The Effects of Priscol on Peripheral Vascular Diseases, Hypertension and Circulation in Patients. *Ann. Surg.*, 127: 968-991 (May) 1948. GRIMSON, K. S., MARZONI, F. A., REARDON, M. J., and HENRIX, J. P.: The Effects of Priscol on Vascular Diseases and Hypertension in Patients. *Surgery*, 23:728 (Apr.) 1948. GRIMSON, K. S., HENRIX, J. P., and REARDON, M. J.: Newer Adrenolytic, Sympatholytic and Ganglionic Blocking Drugs. *J.A.M.A.*, 139:154-155 (Jan. 15) 1949.

15. DEBAKEY, M. E., BURCH, G., RAY, T., and OCHSNER, A.: The "Borrowing-Lending" Hemodynamic Phenomenon (Hemometakinesis) and its Therapeutic Application in Peripheral Vascular Disturbances. *Ann. Surg.*, 126:850-865 (Dec.) 1947.

16. LEE, F. C., MACHT, D. I., and PIERPONT, R. I.: The Use of Bromsalisol in Lengthening Effect of a Sympathetic Nerve Block. *Am. J. Med. Sc.*, 209:314-324 (March) 1945.

17. WETHERELL, F. S.: Treatment of Arterial Embolism of the Extremities. *N. Y. State J. Med.*, 44:35-42 (Jan. 1) 1944. PEARSE, H. E. JR.: Embolectomy for Arterial Embolism of the Extremities. *Ann. Surg.*, 98:17-32 (July) 1933.

18. JASPER, H.: An Improved Clinical Dermometer. *J. Neurosurg.* 2:257-260, 1945. RICHTER, C. P.: Instruments for Using the Cutaneous Resistance Recorder, or "Dermometer," on Peripheral Nerve Injuries, Sympathectomies and Paravertebral Blocks. *J. Neurosurg.*, 3:181-191, 1946.

19. MARTIN, W. B., LAUFMAN, H., and TUELL, S. W.: Rationale of Therapy in Acute Vascular Occlusion Based upon Micrometric Observations. *Ann. Surg.*, 129:476-493 (April) 1949.

20. PAUL, W. D., DAUM, K., and KEMP, C. R.: The Action of Choline on the Blood Lipid Fractions in Cirrhosis of the Liver, Diabetes Mellitus and Related Conditions of Disturbed Fat Metabolism. *J. Iowa M. Soc.*, 37:146-152 (April) 1947.

Fantastic

THE Socialists have talked a lot about the common good of the common man. Personally I loathe the phrase. I don't believe a common man exists, and I have short circuited that point by asking you to remember that not even socialists yet have had the effrontery to refer to the common woman. Under socialism in Britain we have been trying to do something that is quite fantastic, and you as professional men who are guardians of liberty in the very strictest sense should know it. If you ask me to put my finger on the malady in Britain today, I would say without a moment's hesitation that we have tried to strengthen the weak by weakening the strong. And we have tried to legislate unsuccessful people into prosperity merely by legislating successful people out of it. For years —as long as I can remember, my people have been poisoned with the heresy that you can have in this wicked world something for nothing. It just does not add up. And I cannot remember in my lifetime any single piece of legislation that has been put over with more ballyhoo than the so-called free medical service—free—free—the patients' contribution to socialized medicine in Britain amounts to $2,800,000 a week. If that is a free medical service, I, as an ordinary businessman, ask for one that isn't, because it might be cheaper and it couldn't be dearer ....The life of the doctor under socialized medicine is the life of a glorified clerk and nothing else. All his case reports which were private and confidential and which were his exclusive property are now made out in triplicate and are made available to Local Lay Councils and to Regional Boards. I mentioned the status of the doctor. Even in the highly individual perogative of a doctor, namely, prescribing for his patient, he is no longer master of himself, because regional boards can override a prescription and have done so many times already. The moral and scientific degradation of medicine has been so terrible in Britain in the few short months that it has been in operation, that I tremble to think what will happen to my country if we don't come back to political sanity and make readjustments more in keeping with the hearts and souls of men and women.

—From "The Impact of Socialized Medicine on the British Physician and His Patient," by CECIL PALMER, of London, in *Connecticut State Med. J.*, September, 1949.

A Challenge to the Medical Profession

DAVID D. HENRY,
President, Wayne University,
Detroit

IT IS appropriate that the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS should meet in Detroit, one of the great industrial capitals of the world. Although I am a layman in your field, I represent an institution that also has a close relationship to the industrial welfare of this great community. I come from an urban university where there are no "ivory towers," where no wall is erected to preserve academic isolation. On the contrary, as an urban institution, we try to be alert to the community problems as they may be related to the arts and sciences, to the social sciences, to technological achievement, and, of course, to health.

We recognize what many laymen forget—that many of the great industrial achievements, which constitute the very foundation of the welfare of this community, have been built upon the health protection of workers. The contributions of chemistry to the control of gases, of physics to the control of radioactive agents, of engineering to sanitation, of personnel administration to mental hygiene, are but illustrations of the basic point. We recognize that occupational medicine is more than first aid for injured workers, more than a device for the computation of injuries from which may be calculated compensation liabilities. We also recognize that much of the improvement in public health organization and achievement has progressed from these victories in occupational medicine; and in recognition of our concern with these problems at Wayne University, we have tried to do our part by establishing a program in occupational health. Therefore I want to express gratitude to you and to those whom you represent for the medical job you have done, and more, for the effective interpretation you have brought to leaders in industry and labor of the basic values in occupational medicine.

I WAS PARTICULARLY impressed by statements in the September, 1946, Bulletin of the American Foundation of Occupational Health which outlined the benefits to industries and workers which have come from the installation of medical programs and then gave these conclusions:

"Enlightened management knows these facts. The present problem, therefore, is not to convince, but to aid management in the securing of properly trained medical personnel and of the installation of medical programs which will bring these benefits to labor and management alike...

"The present bottle-neck is the dearth of physicians with the specific training required for the successful practice of medicine in industry. The cause of this bottle-neck is the lack of sufficient undergraduate and post-graduate courses of industrial medicine in our medical schools."

Then there are two additional statements from the first issue of the same bulletin:

"The tremendous expansion of industry in the past five years, and the consequent increase in the number of physicians practicing occupational medicine, have brought about an intensified demand for wider and more thorough teaching of this specialty in our medical schools...

"Only as medical schools, physicians in the field of occupational medicine, and business management cooperate, pooling their information, experience and facilities, can teaching in this specialty be made adequate in the training of doctors who guard the health of America's 50 million men and women in industry."

And so, you have come to the medical schools of the country for assistance in developing what you have already established as a very essential program for the welfare of American life. It is appropriate to place this conclusion against a setting which delineates a much larger problem.

American medicine is not only the best in the world today, but the best that has ever been produced in all history. American health is at the highest level ever recorded for a nation in the history of the world. Impressed by the miracles already achieved, the public asks that that service be extended and that the health record be still further improved.

We have come to understand, as a people, the importance of health, not only to the comfort, convenience, happiness and prosperity of the individual, but to the economy of the nation. We have come to understand that healthy workers are more productive and that healthy workers are less expensive. More important, we have come to understand the place of health in the defense of the nation. Our consciousness at this moment of international tension, of "survival in a divided world," makes the subject we are dealing with one of the most important before the American people. In this general setting, we face an unprecedented demand for health service workers. This is due to the following conditions:

1. With the development of hospital and health insurance, more people than ever before demand more care;

2. We are witnessing a great increase in what may be called institutional medicine and must recognize the demands for more doctors, nurses, and other health workers to supply the expanding military department, the Veterans Administration, the new programs in industrial medicine, the extension of hospital facilities;

Presented at the Thirty-Fourth Annual Banquet of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, Detroit, Michigan, April 7, 1949.

3. We are living in an age of research, with increasing emphasis being placed upon preventive medicine. Personnel is therefore demanded (a) to conduct research in the colleges and universities, in foundations and institutes, in the Federal and state governments, and in the laboratories of industry; (b) to supply the increased demand for public health service at the local, state, and Federal levels—the public not only expects, but takes for granted, the control of communicable diseases which once were catastrophic scourges on broad masses of people; (c) to further the tremendous development of occupational medicine.

4. The increase in specialization is withdrawing more and more people from general practice in medicine, nursing, and allied groups so that these must be replaced by more workers. We have not only all the specialties in medicine that you know about, from cardiac to glandular and allergy, all the specialties in surgery from fractures to neuro-surgery, but the new specializations, such as psychiatry and industrial medicine.

The program represented by these demands must go on, but I think it is obvious it can't go on unless we increase the supply of trained manpower to do the job. I am not expert enough to step into the middle of the controversy which revolves around the definition of how many more health workers we need—but that we need more than we are now producing goes without saying. The population increase in the country alone demands more workers than are at present being produced, and these demands should remove, I think, the premise that a mere redistribution of the present workers will do the job.

And at this point, I want to say that I believe you can't even get a redistribution of present workers, except by the dictatorial governmental methods. Our only hope, in my judgment, of keeping medicine free from governmental control, is to bring the fundamental free enterprise concept of supply and demand into balance.

At the present time it is recorded that we have 200,000 physicians. We are graduating from our medical schools some 5500 per year. Over 4000 of these 5500 are needed for replacement of the normal turnover from death and retirement. The small group left is the only margin that we have to meet the unprecedented demands previously outlined. I think you will agree that they aren't enough. We have in this country 78 medical schools, 37 schools of dentistry, nine schools of public health, and 118 schools of nursing, with only a few of the latter accredited with university affiliation. Upon this small group rests the tremendous burden of supplying the demand for increased workers.

There has recently come to my desk an impressive report on the situation as viewed with national perspective. The report is issued under the auspices of the Presidents of Cornell, New York University, Harvard, Columbia, Yale, and Pennsylvania. These are spokesmen for institutions with old and distinguished medical education programs. The report states as follows:

"Demands for medical care and public-health services in the United States today are unprecedented and steadily mounting. The shortage of medical and health personnel to provide such care and services, however, is acute.... There are now some 200,000 physicians in the United States listed by the American Medical Association As our population increases, as it is now rapidly doing, we must have more doctors. Similarly, the country is in need of more dentists. Our needs for medical teachers and research personnel are extreme. In these and other categories of health and medical manpower, the nation faces shortages. To meet this it will be necessary to increase the annual production of physicians, dentists and public-health officers." Yet, at this very moment, all of these institutions face a grave financial crisis. Again, a quotation from the Presidents' report:

"These problems are so critical as to threaten seriously their ability to provide the nation with either the quality or the quantity of trained personnel essential to maintain and improve the health of our people... So acute is the financial condition of all our colleges of medicine and related professional schools, that few can continue even their present programs for long without prompt and large-scale financial aid."

All of this is in accord with an official statement of the Association of American Medical Colleges, adopted in 1948. An excerpt states:

"All medical schools are experiencing great difficulty in finding funds for the adequate training of physicians, just when demands for medical care and public health are unprecedented and steadily mounting. The quality of medical education is in danger of deteriorating for lack of sufficient income. The present salaries of teachers, nurses, technicians and other personnel do not meet the increased cost of living. Teaching is handicapped for lack of adequate equipment and space. Since the maintenance, let alone the advancement, of the medical welfare of our people depends on the production of adequate numbers of well trained physicians and research workers, the under-financing of medical schools is a problem of national moment...

"In the United States, medical schools have been financed in four ways: private endowment, private gifts, tuition fees and taxes. Income from endowment and private sources has steadily decreased. Tuition fees, which paid 70% of the cost of medical education in 1910, now pay less than 30% of such cost; yet tuition fees are already so high that many capable students are barred from studying medicine. It is to public support that medical schools must turn...."

One final statement clinches the point:

"Worse even than this is the threat to the high standards of medical education which this shortage of funds has brought about. Many of our medical schools have been forced to abolish important teaching positions, reduce teachers' salaries, restrict promising research, and make

unreasonably heavy demands upon the time and energy of their personnel. Teaching programs have been reduced to the danger point. Yet--instead of a lowering of standards—the demands of the nation for more and better medical care and for intensified research call for expansion and improvement of our medical schools."

I come now to a definition of the tremendous task which confronts us. Medical education is expensive, and this applies, also, to dentistry, nursing, and all the specialized branches. It is expensive because, first, the production of effective workers requires individual study in the classroom, in the laboratory, and at the bedside of the patient. Second, it requires highly trained teachers for whom salaries must be paid that are competitive with those paid in private employment. Third, facilities required are extensive and highly specialized both in construction and equipment. Fourth, the effective teaching program requires expensive research, for research is the essence of good teaching, of the procurement of good facilities, and of medical progress.

The average expenditure per year behind each medical student is $2200; the average tuition which the student pays is $513, leaving approximately $1700 for each student per year to come from taxes, endowments, or annuities.

Tuition rates are already high, and unless we wish to follow the undemocratic practice of limiting opportunity for medical education to the wealthy, no further financial assistance can be expected from this source. What do these figures mean? I draw these summaries from the Presidents' report previously referred to. The present budgets of our medical schools gross approximately 59 million dollars. Student fees account for $12,800,000 of this amount; gifts and grants account for another $20,700,000; taxes account for $17,500,000. It is estimated that an additional 15 million dollars is needed for medical schools to stay in business and maintain present standards. If numbers are to be increased, approximately 25 million dollars is needed, or a total of 40 million dollars for colleges of medicine alone. In the same computation it is estimated that schools of dentistry and public health, in order to increase their numbers, should have seven million dollars, and colleges of nursing 15 million dollars. Adding these together, we get the figure of a new annual requirement of 62 million dollars for education in medicine and allied fields. All of this is without reference to the requirements for capital improvements which a former president of the Association of American Medical Colleges has set at 200 million.

I am not prepared tonight to validate these figures or defend them. They seem fantastically high; but from my knowledge of one medical school out of the 78, I believe that they are not inaccurate. But even if you should discount a large fraction of the sums I have given you, you have left a tremendous task in fund-raising. The sums are such that it's hardly believable that they can come from any one source. Local and state communities have resources, both public and private, that undoubtedly will have to share. National foundations will have to face the problem too, and repugnant as is the idea of Federal assistance to many, it seems that the problem is of such magnitude and is so closely related to the national welfare that some means of Federal participation must be considered. And if Federal assistance to medical education will help us to restore supply and demand in a way that will keep the government out of the practice of medicine, I think we might well look at this alternative.

There are those who say that increased production can come by increasing numbers without maintaining our present high standards of selection and of teaching. This price, however, would be paid by the people in ways that cannot be computed in dollars and cents.

YOU and those whom you represent have a direct and specific stake in the solution of this tremendous problem. Apart from your general professional concern with improving health standards, as a group concerned with a specialty, you want men and women in industrial medicine and service. You have asked for more teaching time, both at the undergraduate and graduate levels; you want more in-service education for present workers; you want research directed to your specialized concerns. With your vast constituency and the importance of your goals, you should have these objectives fulfilled. But I see no way of having them fulfilled unless we tackle the whole problem:

I believe the medical profession—all of it—and all of the other professions related to health service, should be the front-line interpreters of the needs of medical and health education. I feel that today they are not in that front line. Busy people concerned with fragments of the total problem—you and others have not developed the crusading spirit on this issue essential to get the job done. As a layman in the field, I feel that those of us who want to help and who are daily trying to help are handicapped by the lack of enthusiasm and well-organized, overwhelming concern from the profession as a whole. I think the time is here when we must mobilize our strength, lay and professional, and get the job done. We must not be appalled at its magnitude, discouraged at the frustrations we encounter. Our theme may well be that defined by Ralph Waldo Emerson over a hundred years ago: "If there is any period one would desire to be born in—is it not the age of the Revolution; when the old and the new stand side by side, and admit of being compared; when the energies of all men are searched by fear and by hope; when the historic glories of the old can be compensated by the rich possibilities of the new? This time, like all times, is a very good one, if we but know what to do with it."

ASSOCIATION NEWS

A JOINT Committee on Standing Orders of the American Medical Association, the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS and the American Association of Industrial Nurses met in the A.A.I.P.&S. offices on September 20, 1949, from 2:30 to 5:00 P.M. Attending were DR. CARL M. PETERSON, DR. FREDERICK W. SLOBE, DR. CHRISTOPHER LEGGO, of California, DR. E. C. HOLMBLAD, MRS. DUNDORE and MRS. HARGREAVES of New York, and RUTH EISERMANN of Cleveland. The question of the revision of standing order pamphlets was discussed and it was decided that the A.A.I.N. would send a questionnaire to the membership for research on the subject. It was also suggested that a statement be drafted on policy in regard to industrial nursing practice.

THE second preliminary program meeting, planning for the 1950 convention, met in the Association offices at 5:00, recessed for dinner at the Swedish Club at 7:30, and continued until 11:00 P.M. on September 20. Many topics and subjects came up for discussion and these particular problems are to be referred back to the respective committees for consideration. The CENTRAL STATES SOCIETY OF INDUSTRIAL MEDICINE AND SURGERY and the CHICAGO SOCIETY OF INDUSTRIAL MEDICINE AND SURGERY are enthusiastically indicating their desire to cooperate in preparing this meeting. DR. J. M. L. JENSEN, Program Chairman for the CENTRAL STATES SOCIETY, and DR. EUGENE F. WALSH, Program Chairman for the CHICAGO SOCIETY, will arrange a joint program for one of our days. Others present at this meeting were: WARREN COOK and HERBERT WALWORTH representing the A.I.H.A., KENNETH MORSE for the A.C.G.I.H., DRS. E. H. THOMAS and G. O. DAVIES of the A.A.I.D., MRS. DUNDORE, MRS. HARGREAVES, and MISSES BURGESON and BRUDER of the A.A.I.N.; and representing the A.A.I.P.&S. were DRS. E. H. CARLETON, H. GLENN GARDINER, E. C. HOLMBLAD, B. C. KILBOURNE, A. K. PETERSON, R. M. WATROUS, R. M. GRAHAM, F. W. SLOBE, HEDWIG S. KUHN, CHARLES DRUECK, CARL T. OLSON, and MRS. E. H. CARLETON and STEPHEN G. HALOS. DR. CHRISTOPHER LEGGO, Secretary of the WESTERN ASSOCIATION, was present and offered his suggestions and comments.

PRESIDENT WHITTAKER recently called a meeting of all of the fellows and members of this Association in the District of Columbia area. Twelve persons were in attendance at a dinner at the Washington Statler—DRS. ROYD R. SAYERS, R. LOMAX WELLS, SAMUEL M. BECKER, JAMES W. BRADEN, ROBERT H. FLINN, EMIL J. HILDEBRAND, HERBERT L. PHILLIPS, W. C. DREESSEN, JAMES G. TOWNSEND, ALVIN B. C. KNUDSON, EDWARD C. HOLMBLAD, and ALFRED H. WHITTAKER. DR. JOHN W. CRONIN was unable to attend because of sudden illness in his family. One of the purposes of this dinner was to discuss the possibility of stimulating a local Component Society in the area. The thought is toward three or four years in the future when it will probably be desirable to have our Annual Convention in the City of Washington, and we would like to have a local organization to aid us in sponsoring such an annual meeting there. The real value of such a gathering however, is that all of our Fellows and members can get better acquainted, and inasmuch as we have so many problems of industrial health in common, it gives us an opportunity to discuss them frankly and from various angles. It was gratifying to the officers of the Association to notice the genuine interest and instructive contributions made by the various members on the problems of industrial health. It is hoped that we can arrange for more of these meetings throughout the country with our local groups. We will be glad to hear from any members who feel the time is opportune to arrange for such a dinner meeting in their locality.

PRESIDENT A. H. WHITTAKER, and MANAGING DIRECTOR E. C. HOLMBLAD, represented the A.A.I.P.&S. at the Coordinating Committee meeting of the President's Conference on Industrial Safety in Washington, September 15, 1949. This was attended by some 40 people representing the U. S. Department of Labor, management, safety engineers, National Safety Council, trade associations, etc. The publication of the recommendations of the 1949 conference is expected to be off the press about October 15. There is also much planning for future meetings. It is to be remembered that the primary objective of the President's Conference on Industrial Safety is to reduce the number of accidents in the United States by 1,000,000 per year wthin a three-year period. It is toward this objective that all of these agencies are so diligently working.

THE University of Pittsburgh School of Nursing announces two Workshops for Industrial Nurses (staff level), the first to be held on 10 consecutive Saturdays from September 17 to November 19, the second for 10 consecutive days from October 31 to November 11. Registration will be limited to 20 participants and should be made immediately. Regular classes for industrial nurses can be attended at the Cathedral of Learning on Monday and Thursday evenings from 6:20 to 9:45.

FROM Hartford, Connecticut, comes the news that beginning October 18 a six-weeks', two-hourly course in Compensation Medicine will be sponsored by Yale University. DR. ALEXANDER MARBLE is to be among the notable speakers at these sessions, and the charge for the course has been reduced so as merely to cover operating costs. Since much of the compensation work in Connecticut is handled by the general practitioner, the impetus given should be sufficient to warrant a regular course being offered by the Graduate School of Yale University, and we are advised that if attendance is satisfactory it will be offered in several cities next year.

COLONEL A. D. TUTTLE, of Chicago, Medical Director of United Air Lines since 1937, in charge of the health service for approximately 10,000 employees, was elected president of the Aero Medical Association at its rcent New York convention. COLONEL TUTTLE headed the army school of aviation medicine before he retired in 1937. He served in the Spanish-American War, the Chinese Boxer uprising, the Phillippines, and World War I.

INDUSTRIAL MEDICINE AND SURGERY

EXECUTIVE, EDITORIAL, AND PUBLICATION OFFICES: 605 NORTH MICHIGAN AVENUE, CHICAGO, ILLINOIS

Editor: C. O. SAPPINGTON, M.D., DR. P.H.

Associate Editors:

HENRY S. BROWN, M.D. • JAMES T. CASE, M.D., F.A.C.S. • JEAN S. FELTON, M.D. • LYDIA G. GIBERSON, M.D.
IRVING GRAY, M.D., F.A.C.P. • EMERY R. HAYHURST, M.D. • EDWARD C. HOLMBLAD, M.D., F.A.C.S.
RUTHERFORD T. JOHNSTONE, M.D. • WILLIAM F. LAUTEN, M.D. • ROBERT T. LEGGE, M.D., F.A.C.S. • CHRISTOPHER LEGGO, M.D.
OSCAR L. LEVIN, M.D. • CAREY P. McCORD, M.D. • WM. D. McNALLY, M.D. • ARTHUR R. METZ, M.D., F.A.C.S.
M. N. NEWQUIST, M.D. • OSCAR A. SANDER, M.D. • FREDERICK W. SLOBE, M.D., F.A.C.S.

ESTABLISHED 1932 *Publisher:* A. D. CLOUD

Volume 18 OCTOBER 1949 *Number 10*

"Gift" or "Right"

"THE GIFT OF FREEDOM" is the title of a new book published by the U. S. Department of Labor. This is a study of the social and economic status of the American wage earner. "It was designed to inform workers in other countries how their American counterparts live. In eight chapters it describes employment characteristics, the economic basis for living standards, what an hour of work will buy, the history and development of the labor movement, and political and personal freedom." It is available from the Superintendent of Documents, Washington 25, D. C., at 55 cents a copy. Already there are echoes, in radio broadcasts and current articles, of its appearance in foreign countries. One wishes it could be translated into all languages and become a "best seller" in each. For it is a good book, well-conceived, studiously written, convincing in detail, and its conclusions are factually drawn without argument and solely within the American scene. It is such a good book, indeed, that criticism may be thought more captious than sensible. Nevertheless the American reader can't help being conscious of several things which he will wish could have been changed. One is the title. Freedom is *not* a gift. To label it as such implies that there was a giver. Who was he? Or it? Certainly not the government, nor the political party in temporary control of the government. Freedom is a *right*, inherent with life, and subject only to such restraint as life among other lives imposes. It is recognized, however, that a difficulty in calling the book "The Right of Freedom" might ensue from the connotations of contrast between "right" and "wrong," or more probably from the recently acquired political significance of "right" as distinguished from "left." No doubt these hazards of semantics occurred to the authors; and so it is hoped that the term "gift" will be understood in its broad sense, as part of the God-given blessing of being an American. Another objection to parts of the book is the too obvious bias in favor of the labor unions. This is apparent in such comments as the following: "Repeatedly, in union resolutions and in actions related to specific situations, labor organizations have given vigorous support to virtually the whole range of civil rights and liberties. Typically, the unions have taken the lead in advocating changes later adopted, such as the secret ballot, woman suffrage, the right to strike, and the freeing of unions from early laws against conspiracy." Then follows "an incomplete list of such measures that have been vigorously and in large part effectively advocated by unions," and in the list are "freedom of speech, freedom of assembly, freedom of the press." The implication as to these having become a part of our "freedoms" because of union advocacy is nonsense, but it is inevitable. For the sake of an otherwise good piece of work, we hope it was not intentional. The unions have enough in their favor without straining to make them the "giver" of all the elements of our liberty. In apposition, however, there are such passages as this, of which there are several: "Both unions and employers have at times been unreasonable in their demands or uncompromising in their attitudes. But unions, like management, nevertheless contend that it is far better to be free and make mistakes than to be regimented and be denied the opportunity to make their own decisions or to challenge decisions made for them." This is commendable moderation—even in the face of the vehement objection by the unions when the medical profession raises its voice against regimentation. It could, however, have been noted that the professional man, the private enterpriser, even the individual, likewise prefers to be free and to make his own mistakes. One of the nice things about our freedom is that it is not only freedom "from," but is also freedom "to." Thus those who have made certain mistakes in recent times, while not free from their present effects, are still free to correct them at the next, shall we say, opportunity. Meanwhile, "The Gift of Freedom" is well worth reading, and eminently worth keeping as a reminder . . . .

DERMATITIS
CAN HANDCUFF YOUR PRODUCTION!

Safeguard All Hands with WEST LAN-O-KLEEN HAND CLEANSER

The shackles of industrial dermatitis can handcuff your workers' manual efficiency—tie up your production schedules—cripple plant morale—and cut sharply into your profits.

One way to remove these costly shackles is to avoid *unsafe* wash-up soaps. Instead, use WEST LAN-O-KLEEN—the mild, safe, quick-acting powdered soap that helps *protect* hands against the effects of industrial irritants. Dispensed through an economical, modern dispenser, WEST LAN-O-KLEEN contains no harsh ingredients or excess alkali to harm sensitive skins. Also, it is prepared of a gentle corn meal base which is "lanolinized"—thus helping to offset loss of natural skin oils.

TRY LAN-O-KLEEN FREE—and SEE!

Fill out the coupon below! It'll bring you a sample of industry-proved WEST LAN-O-KLEEN without obligation. Along with this you'll receive a fact-packed booklet. It'll explain how WEST LAN-O-KLEEN and the modern LAN-O-KLEEN DISPENSER can cut your costs considerably.

SEND FOR FREE SAMPLE

WEST DISINFECTING *Company*

42-16 West Street,
Long Island City 1, N. Y.

WEST DISINFECTING COMPANY
42-16 West Street, Long Island City 1, N. Y.

Gentlemen:
Please send me a free sample carton of LAN-O-KLEEN.

Name_____ Position_____

Company_____

Address_____

City_____ State_____

R

NEWS, COMMENT, OPINION

Vision Service

AN industrial vision protective service designed to promote the visual efficiency and safety of workers in Baltimore plants has been put in operation by the Maryland Society for the Prevention of Blindness in cooperation with local and industrial groups. Service includes an eyesight-screening examination of the workers. The service is designed primarily to be available at the request of plant managers who employ 200 workers or less. Findings of surveys will make it possible to learn of visual deficiencies and to initiate needed professional and protective care.

—*J.A.M.A.*, August 6, 1949.

Absenteeism Checks

ONE effective method of handling absenteeism in some plants was recently reported by the Peoria Employers' Association. Come payday, in addition to the actual pay checks, nonnegotiable checks are filled out in the amount of earnings lost during the period because of absenteeism. These are mailed to the employees' homes and it's a safe bet that wives have something to say about the money that didn't come in! It has been noted that absenteeism began to decline.

—*Management Review*, August, 1949, quoting *Supervision*, July, 1949.

What, Indeed?

THE question is, how far do we want to go toward the Welfare State? Compulsory health insurance is the longest leap yet proposed; and, once it is taken, the question will no longer be whether we want to have a Welfare State—we shall already have it. Other measures will follow in rapid order once this great leap is taken; and, before we realize it, we shall have a State like that in Great Britain. Do we want this? What, in Heaven, is there today in Great Britain that we can possibly envy? A lower standard of living. A hungry people. Government regimentation of currency, housing, food, recreation. A country on the verge of bankruptcy —and brought to this critical juncture largely, in the words of their own Chancellor of the Exchequer, through the cost of their social insurance scheme.

—From an Address by DR. PAUL R. HAWLEY at Jacksonville, Florida, July 21, 1949.

Health Conference

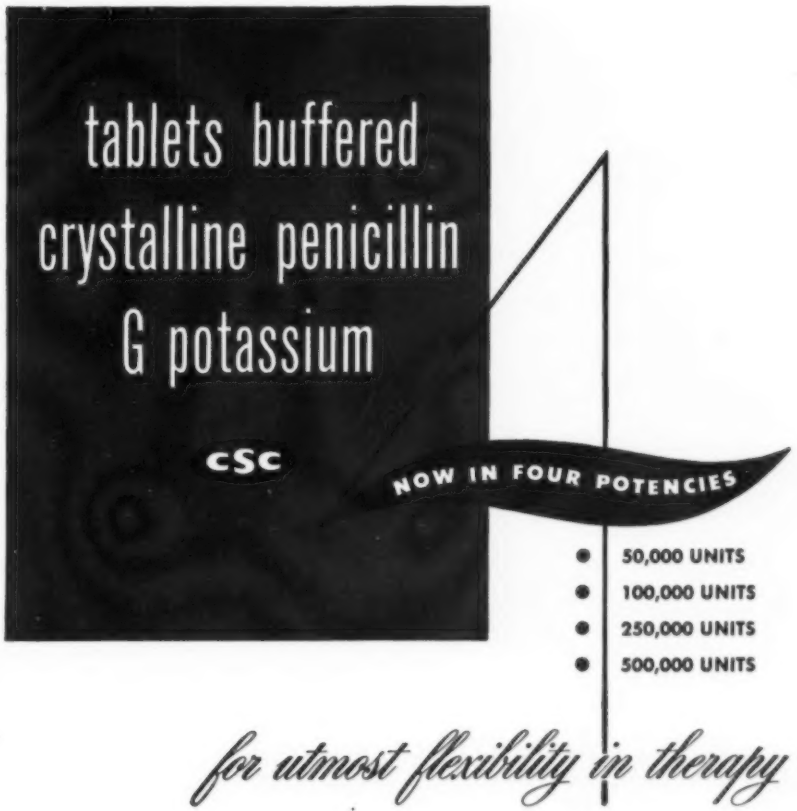
AT THE conclusion of a meeting in Washington on September 8, DR. C. M. PETERSON, secretary of the Council on Industrial Health of the American Medical Association, announced that encouraging progress has been made toward formation of a permanent conference which would bring cooperative effort to bear on advancement of health and safety in industry. Attending the September 8 meeting at the Hotel Statler were B. B. LAUSCHE, E. H. ROBERTSON and A. L. KIRKPATRICK, representing the U. S. Chamber of Commerce; COLLINS WINSTON, National Association of Manufacturers; HARRY REED, Congress of Industrial Organizations; DR. A. J. LANZA, chairman of the Council on Industrial Health; DR. RAYMOND HUSSEY and DR. C. M. PETERSON. Final organization plans are expected to be completed at

Avoid Television Trouble
USE
Microtherm
RADAR DIATHERMY
No doctor today can afford to be without proper diathermy equipment, but no doctor can afford to risk television interference.
Check for TV interference before you buy any diathermy equipment. FCC approval does not guarantee freedom from interference or from restriction if interference develops.
Play safe. Microtherm employs radar frequencies way above the television wave range — no interference.
Ask your dealer to give you a demonstration of the modern Raytheon Microtherm, or write for Bulletin DL-MED601
Approved by the F.C.C. Certificate No. D-477 Underwriters' Laboratories
ADVANTAGES OF RAYTHEON MICROTHERM
1. Penetrating energy for deep heating
2. A desirable temperature ratio of fat to vascular tissue
3. Effective production of active hyperemia
4. Desirable relationship between cutaneous and muscle temperature
5. Predetermined and reproducible dosage — no tuning
6. Controlled application over large and small areas
7. Elimination of electrodes, pads and danger of arcs. Shock-proof
8. No contact between patient and directors
RAYTHEON
Excellence in Electronics
RAYTHEON MANUFACTURING COMPANY
POWER TUBE DIVISION
WALTHAM 54, MASSACHUSETTS

the group's next meeting here, probably in October.
—*J.A.M.A.*, September 17, 1949.

Feet

WORKERS who hobble around on such ailments as "policeman's heel" or "chauffeur's foot" cost American business and industry almost a billion dollars annually in absenteeism and inefficiency. This was asserted by DR. LESTER A. WALSH at the 37th annual convention of the National Association of Chiropodists in the Drake hotel. Persons who work or walk on hard floors often develop "policeman's heel," a loss of the protective fat pad beneath the skin of the heel, said DR. WALSH, who practices in Wilmington, Delaware. Motor vehicle drivers are attacked by a painful callus known as "chauffeur's foot." The chiropodist said delivery men, who jump from trucks to the ground in their work, often suffer from an enlargement of the first ball joint of the foot. Even pipe fitters and plumbers have their own ailment, a faulty alignment of toes and metatarsal arches from too much kneeling. Women, however, far outnumber men in all 53 types of foot trouble, DR. WALSH said. "They have about 15 times more foot trouble than men. They hold a two to one lead in wearing the worst possible shoes for the job, and they also excel in getting their feet under falling objects, or bruising them in the plant."
—*Chicago Tribune*, August 20, 1949.



Oral penicillin therapy is placed on a convenient, efficient basis by the four potencies of Tablets Buffered Penicillin G Potassium-C.S.C. that are now available: 50,000 units, 100,000 units, 250,000 units, and 500,000 units each. The higher potency tablets are especially valuable in that large doses may be given without undue inconvenience to the patient, making practical the therapy of many acute infectious diseases usually treated parenterally. Tablets Buffered Penicillin G Potassium-C.S.C. are adequately buffered for protection against the destructive action of gastric hydrochloric acid and are heat stable, requiring no refrigeration. Available on prescription at all pharmacies.

C.S.C. Pharmaceuticals

A DIVISION OF COMMERCIAL SOLVENTS CORPORATION • 17 E. 42ND ST. • NEW YORK 17, N. Y.

Unfair Competition

IT IS interesting to note that a resolution is to be submitted to the AMA House of Delegates to the effect that whereas constitutional laws are designed to protect the property and enterprises of each citizen, and whereas many governmental agencies are now in active competition with individual enterprises, with every indication of further inroads by the government, the members of the AMA petition Congress to preserve the intent and purposes of the Constitution by initiating an amendment to the Constitution providing that the United States Government shall not engage in any business, or in professional, commercial or industrial enterprises in competition with its citizens except as specified in the Constitution.

—From an Editorial in *Minnesota Medicine*, June, 1949.

Macy's

SEVEN thousand employees of Macy's, members of Local 1-S, unaffiliated, are covered by a health plan that protects them against doctors' and hospital bills, the store and the union announced yesterday. The plan, which went into operation on August 1, was an outgrowth of collective bargaining negotiations. The company will contribute 52.3 cents a week and the union 50 cents a month for each worker. The plan covers all employees at Macy's Herald Square, Parkchester, Jamaica and Flatbush stores. Full protection is also provided to wives and husbands of employees and to unmarried children over 90 days and under 18 years of age. Doctors' bills will be re-

imbursed up to $225 for one operation and up to $450 for concurrent operations, and there is no limit to the number. Doctors' bills covering non-surgical care in hospitals will be paid for an aggregate of 201 days within the contract year and to a maximum of $454. Participants may engage any doctor they choose.

—*New York Times*, August 11, 1949.

Industrial Nurse Section

THREE sessions of the National Safety Council's industrial nursing section are scheduled for the 37th National Safety Congress, annual convention of the Council, to be held in Chicago, October 24-28. The first meeting, October 24, will feature a talk on developing the opportunity for tuberculosis case finding in industry by DR. EDWIN R. LEVINE, director of chest service at Chicago's Michael Reese Hospital. MRS. HELEN ELROD, R.N., assistant executive secretary of the American Nurses Association, New York City, will discuss new challenges for the industrial nurse. A luncheon to honor past general chairmen of the industrial nursing section will kick off the second meeting on October 25. DR. J. L. ROSENSTEIN, consulting psychologist and associate professor in the college of commerce of Chicago's Loyola University, will be the featured speaker. A panel discussion on employee counseling will be held at the same meeting, under the leadership of RUSSELL L. MOBERLY, director of the University of Wisconsin's industrial management institute. Participants will be ELEANOR BURTON, chief of the personnel counseling section, Western Electric Co., Inc., Chicago; JOANNA M. JOHNSON, R.N., director of the industrial nursing division, engineering department, Employers Mutuals of Wisconsin, Milwaukee, and DR. DAVID SLIGHT, superintendent of the Veterans Rehabilitation Center, Chicago. The third meeting of the section on October 27 will be highlighted by a talk on safety and industrial medicine by DR. C. F. SHOOK, medical director of the Owens-Illinois Glass Co., Toledo, Ohio. DR. EDWARD C. HOLMBLAD, of the AMERICAN ASSOCIATION OF INDUSTRIAL PHYSICIANS AND SURGEONS, Chicago, will speak on some interesting experiences in industrial nursing problems. All industrial nursing sessions will be held in the Congress Hotel, Chicago, and a discussion period will follow each speech. MRS. JOAN TIMKE, R.N., general chairman of the industrial nursing section of the Natonal Safety Council, will preside at all sessions. The Council's industrial nursing sessions are highlights of the Safety Congress.

External Cod Liver Oil Therapy
DESITIN
OINTMENT
Contains Crude Cod Liver Oil, Zinc Oxide, Talcum, Petrolatum and Lanolin
Used effectively in GENERAL PRACTICE for the treatment of Wounds, Burns, Indolent Ulcers, Decubitus, Intertrigo, Skin Lesions, Hemorrhoids, Anal Fissures, etc.
In PEDIATRICS for the treatment of Diaper Rash, Exanthema, Chafed and Irritated Skin caused by Urine, Excrements or Friction, Prickly Heat and in the nursery for General Infant Care.
Fatty acids and vitamins are in proper ratio, thereby producing optimum results. Non irritant, acts as an antiphlogistic, allays pain, stimulates granulation, favors epithelization. Under Desitin dressing, necrotic tissue is quickly cast off. Dressing does not adhere to the wound. In tubes 1 oz., 2 oz., 4 oz., and 1 lb. jars.
Desitin Medicinal Dusting Powder is super fatted with crude cod liver oil in a non irritating powder base. Indications: In infant care in the treatment of IRRITATED SKIN, SUPERFICIAL WOUNDS, DECUBITUS, INTERTRIGO, PRURTUS and URTICARIA, in 2 oz. Shaker-Top Cans.
Professional Samples on Request
For the Medical Profession
DESITIN
CHEMICAL COMPANY

Ford Motor Company

THE Ford Motor Company maintains 28 physician-staffed medical facilities and 35 first aid stations for treatment of its personnel. There are 14 doctors at work in the Rouge plant in Dearborn alone. The company examines every new employee hired and a complete health record is kept on him, including a chest x-ray taken when he first enters the company's employ. The company also maintains a mobile x-ray unit which can be sent to

any plant area in order to make department surveys. In the last year alone, the doctors and nurses at the Rouge hospital performed 844,332 treatments. Eleven per cent of all medical activity last year was devoted to industrial hygiene. Industrial hygiene specialists made 1,861 separate investigations of such potential problems as gases, dust, and metal fumes, studied effects of solvents on employee health, sought better ways of handling petroleum wastes, etc. They made 2,343 laboratory checks last year, more than half of them in the field. Two-thirds of these investigations were made on the initiative of the industrial hygienists to find better ways to protect the health of employees, rather than as a result of actual requests for investigations. Skin inflammation among employees is kept at an industry low by the use of special protective creams and by repeated sterilization of such protective equipment as goggles, rubber gloves, rubber boots, etc., which are issued free to employees whose work requires such equipment. In a single year 30 tons of protective creams are used. Cooperating with the industrial relations department, maintenance men use up 2,500 mops, 2,000 brooms, 5,000 pounds of soap chips and 15,000 pounds of soap powder each month to keep the Rouge plant clean and, therefore, more healthy. Another factor contributing to the health and welfare of Ford employees, is the safety department which each year issues more than 3,600,000 pieces of safety equipment to employees and supervises the installation and operation of more than 2,000 different kinds of safety guards on machines and equipment. The safety shoe store at the Rouge plant, established to provide safety shoes at the manufacturer's cost to employees, has distributed 16,000 pairs in the last six months.

—From *American Exporter*, New York, July, 1949.

for the control of Obesity when thyroid is not indicated
℞ Profetamine Phosphate Chewing Gum (10 mg)
XXI
Sig. Chew one t. i. d. one half to one hour a.c.
Prescribe
PROFETAMINE PHOSPHATE CHEWING GUM
21 PIECES
Available ONLY to the PROFESSIONS
Boxes of 21's and Bots. of 250 & 1000
ALSO IN TABLETS 5 Mg and 10 Mg
Samples and Literature on Request

Reinforce Dietary Management with Positive Pharmacologic Encouragement. Profetamine Phosphate (monobasic amphetamine phosphate, racemic, C & C) Chewing Gum provides all the actions of amphetamine (as set forth by Freed[1]):

1. Inhibits appetite to a clinically significant degree
2. Elevates the mood and general feeling of well-being
3. Encourages greater physical and mental activity
4. Increases sense of gastric "fullness" by salivary stimulation
5. May be taken, undetectably, anywhere, anytime

THE SYMPATHOMIMETIC AMINE OF CHOICE } **PROFETAMINE PHOSPHATE**
THE DOSAGE-FORM OF PREFERENCE } **CHEWING GUM**

(1 Freed, J.A.M.A., Feb. 8, 1947)

U. S. Patents Pending. "Profetamine" is a trademark of Clark & Clark

Obtainable through all leading pharmacies and surgical dealers, or order direct from:

CLARK & CLARK ★ WENONAH, N. J.

PIONEERS in AMPHETAMINE PRODUCTS for OBESITY

"Through Channels"

ADMINISTRATIVE controls will likely be rather loose and flexible in the beginning, but will become more exact and rigid with the development of the extensive and complcated system. In the main, these administrative controls will fall under three classifications: (1) averages and deviations; (2) inquiries, entailing much letter writing; and (3) an extensive field service, employing auditors and investigators. Averages and deviations will emerge from the tabulations of the reports of work to the national and state administrative agencies. These tabulations will be so designed as to provide such information as the following: the average number of visits per patient by physicians, the average number of visits to uncomplicated deliveries, the average number of visits per patient for the more important diseases, the average cost of dental service per patient, the average length of nursing service for all patients, and for certain types of illness, the average length of stay of patients in hospitals for all diseases and for certain special conditions. The deviation from the averages will appear and receive attention—

such as the state where doctors make a larger number of visits per patient than any other state; the state where doctors make a larger number of visits per patient with pneumonia; the state where more visits are made to uncomplicated deliveries, and so forth on down the line. And as in the national office for the states, so in the state offices for the counties and cities. When these significant deviations appear, the typewriters will go into action—letters from the national agency to the state agency; letters from the state agency to the county agency, and from the county agency to the doctors, dentists, druggists, and hospitals, asking for further information on the deviations from average practice and for explanations. Correspondence will clear up much, but not all matters in question. Then the field service will take over. Auditors will be sent to check accounts of hospitals, drugstores, and houses supplying appliances; investigators will check what appear to be excessive visits to patients, wastefulness in prescribing drugs, connivance with patients to get insurance and stay away from work, etc. Again I quote Dr. Dickinson of the Bureau of Medical Economic Research of the American Medical Association: "Under German health insurance, the duration of illness increased progressively from 14.1 days per illness in 1885 to 29.3 days per illness in 1932. The latter figure is 70% higher than in the United States. Supervising physicians, appointed to curb abuses, found up to 50% of the persons on sick lists able to work."

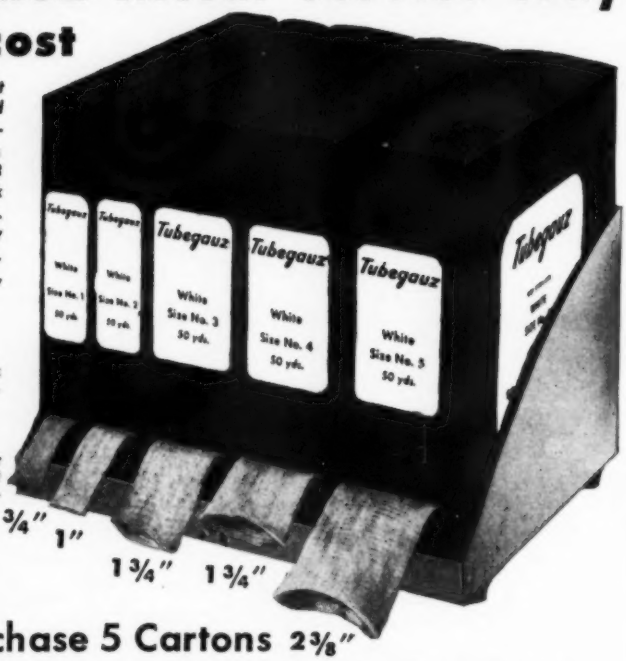
—From "Compulsory Health Insurance," by W. S. RANKIN, M.D., in *North Carolina Med. J.*, March, 1949.

Tubegauz Metal Service Tray at no cost

Heavy grade sheet metal, triple coated white baked enamel. Tray is 8¾ inches wide — 8 inches deep. Back is 5 inches high. Substantial — handy — neat — attractive. Will not scratch, crack, peel.

FOR WALL
Special slots on back for hanging on wall. Screws furnished.

FOR DESK
Extra heavy rubber buttons prevent scratching any surface.



FREE

With Purchase 5 Cartons 2⅜"

Tubegauz - Seamless Tubular Gauze

TUBEGAUZ does away with clumsy, tedious dressings and is vastly better, neater, easier and quicker. Longer lasting, hence danger of infection inherent in frequent redressings is minimized. Because of its lack of bulk, TUBEGAUZ permits use of minor injured parts without interference. Very economical. Costs less than comparable qualities.

SPECIAL ONE-OF-EACH SIZE COMBINATION		LIST PRICE
No. 1	Narrow—¾" Wide, for Fingers and Toes	$2.75
No. 2	Medium—1" Wide for Fingers and Toes	$3.00
No. 3	Wide, 1¾" Wide, for Foot and Ankles, also for Hand, Wrist, Elbow and Arm	$3.25
No. 4	Wide, 1¾" Wide (loosely woven), for Feet, Ankles, Elbows and Wrists	$3.25
No. 5	Head size, 2⅜" Wide, for Head, Thigh, Shoulder and Breast	$4.50
	REGULAR PRICE	$16.75

LIMITED TIME OFFER
To introduce the advantages of the complete line of 5 sizes of Tubegauz in the dispensing cartons.

SPECIAL PRICE
$14.95
WITH FREE TRAY

OR Get the Service Tray Free with 5 Cartons of Tubegauz in any one size or combinations of sizes at list price.

ORDER FROM YOUR DEALER OR DIRECT FROM

Surgical Supply Division
THE SCHOLL MFG. CO., INC.
213 WEST SCHILLER STREET CHICAGO 10, ILLINOIS

Industrial Health Course

THE Harvard School of Public Health has announced a special course for the postgraduate training of physicians who will plan, organize, and direct health programs for industrial and commercial concerns, as well as for labor and trade organizations. This course begins with the year 1949-50; will be synchronized with the main teaching program of the School of Public Health; and will last for eight months, from September to June of each academic year. It will operate under the direction of the Department of Industrial Hygiene of the School of Public Health. The related teaching and research facilities of Harvard University, including certain special facilities at the Massachusetts Institute of Technology and other cooperating institutions, will be available to supplement the instruction. Successful candidates will be awarddd the newly-established degree of Master of Industrial Health. Any qualified physicians may apply, but preference will be given to individuals who have had experience in industrial medicine, and who wish to broaden their effectiveness by postgraduate training in the field of industrial health. A candidate for the degree of Master of Industrial Health must be a graduate of an acceptable school of medicine, and students from the United

States should have completed an internship of at least 12 months in a hospital approved by the American Medical Association. While preference will be given to physicians and surgeons who have had previous experience in industrial practice, the course is open to all qualified physicians. A limited number of individuals who cannot spend a full year at the School, and do not wish to apply for the degree, may be admitted to selected courses and programs of study as special students. For further information and application forms, write to the Secretary, Harvard School of Public Health, 55 Shattuck Street, Boston 15, Massachusetts.

Eye Care

THE Council on Industrial Health of the American Medical Association reports that a Manual on Toxic Eye Hazards, prepared by the Joint Committee on Industrial Ophthalmology is now available at the cost of $1.00. It may be secured from the National Society for the Prevention of Blindness, 1790 Broadway, New York. Chapters of particular interest to industrial nurses are "A Well Organized Eye Protection Program" and "Emergency and First Aid Procedures in Chemical Eye Injuries."

Art of Reporting

A NURSE asks a question: "They are laying off people in my plant. How can I convince management of the value of our work?" This is a poor time to *begin* such a job. It should have begun when the job began. Industrial nursing is a fairly new field. A lot of people, including management, do not understand it. They may see it function but they can't measure its effectiveness without written evidence. Some nurses don't write monthly reports because no one has asked them to do so. Wise nurses submit reports anyway. At first, perhaps, no one reads them. Then as we write better ones, as we persist, the reports become a regular, *anticipated* feature in plant management. Results? Of course, a better understanding of our efforts and aims! The usual report is in three parts: (1) *Statistical*—"In July we had 100 cases of dermatitis, as against 10 last month, and 20 in July 1948." Give your statistics a backdrop. Don't let them stand alone with nothing to compare them with. "100 cases" standing alone may not impress. "100 cases as against 20 in the same month last year," does have meaning. (2) *Narrative*—Interpret your statistics. What meaning do they have for you? What new features, new problems, unusual results have you noted? Have you a good human interest story you can tell briefly? (3) *Look Ahead*—What are your hopes and needs? More counseling, home visiting, new equipment, new policies? Mention them often, briefly, from different angles. Suggestions: Make notes every day for your report. Don't use them all. Good *selectivity* is part of the art of good writing. Furnish your report as you would your living room—don't overcrowd, put what isn't needed aside. Don't *ever* be satisfied with your writing. Work to make one word do for two. Work over your reports as you work over patients. You'll get

When the diagnosis is

Impetigo Contagiosa

Bacitracin Ointment

is the Antibiotic of Choice

The cutaneous bacterial invasion responsible for impetigo contagiosa is quickly eradicated by the specific antibiotic influence of Bacitracin Ointment-C.S.C. This unusual antibiotic inhibits the growth of many staphylococci and streptococci, producing clinical remission of the skin infection within a few days.

Absence of sensitization or local allergic manifestations following its use makes Bacitracin Ointment-C.S.C. especially valuable in topical therapy. The period of therapy is governed by the clinical situation under treatment, and not by the shortcomings of the medication.

Bacitracin Ointment-C.S.C. is indicated in the treatment of many cutaneous infections: infectious eczematoid dermatitis, infected ringworm, infected eczema, ecthyma, infected wounds and ulcers, furuncles and carbuncles. It makes an excellent surgical dressing for draining wounds.

Bacitracin Ointment-C.S.C., containing 500 units of bacitracin per gram, is supplied in ½ oz. and 1 oz. tubes.

C.S.C. Pharmaceuticals

A DIVISION OF COMMERCIAL SOLVENTS CORPORATION, 17 EAST 42ND STREET, NEW YORK 17, N. Y.

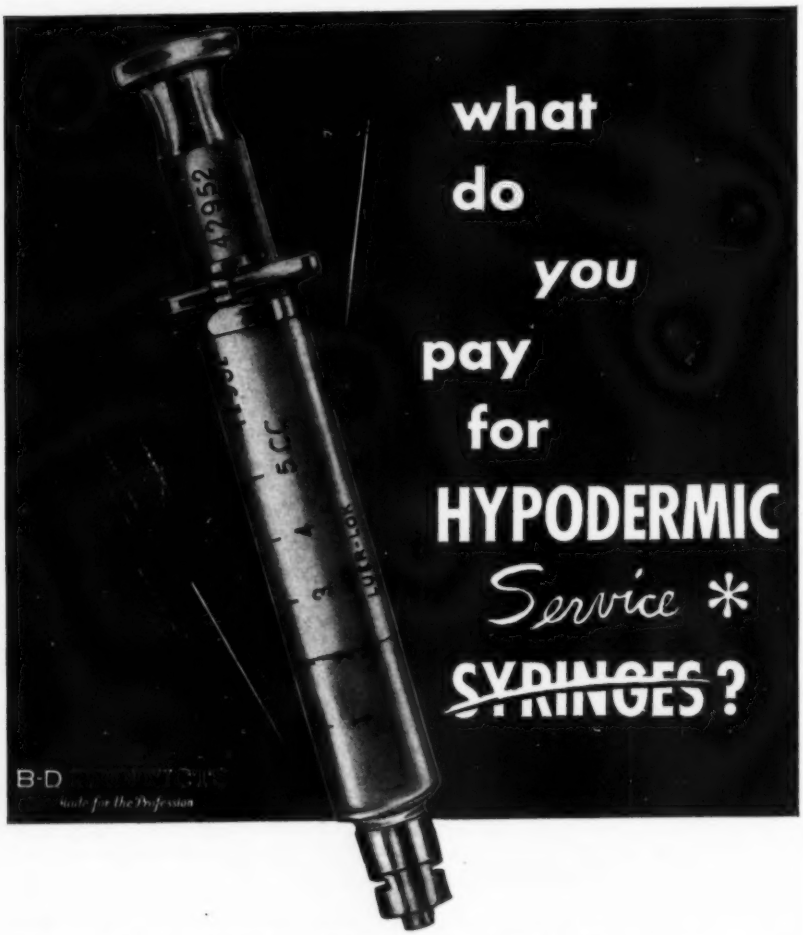
better through trial and error and *trying*. Doing a job well is one thing. Telling about it is another. The two go together.

—*AAIN Newsletter*, August, 1949.

Could This Happen to You?

ATTENTION has been directed lately to liability cases brought against two industrial plants—one in California and one in New England—which should cause thought and constructive action. The case in California concerned a man who developed an infection from an abrasion received at work. Suit for damages was brought against the plant and a separate one against the nurse working in the plant dispensary for negligence. The one in New England was also brought against the plant and nurse by the family of a man who died on the treatment table while receiving treatment with a heat lamp. It was proved that the man had diabetes of which the nurse was unaware (no preplacement examination) and that he died in a diabetic coma. Your nurses, doctors and owners should be protected from the possibility of having to defend themselves against such suits. Professional liability coverage is available through several insurance companies either on an individual basis or on what they call a "one schedule policy" which covers all personnel in the medical department. It's worth looking into.

—So. Carolina State Board of Health, *Industrial Lights*, August, 1949; in *Industrial Health Review*, Industrial Hygiene Section St. Louis Health Division, September, 1949.



*A hypodermic *syringe* furnishes hypodermic *service* to the extent that it stands up under constant use, repeated sterilization and ordinary handling. What you pay for HYPODERMIC SERVICE depends, not on the initial cost of the syringe alone, but on how long a life of service that syringe gives.

To find out what it is costing *you* for HYPODERMIC SERVICE, send for a free supply of B-D HYPODERMIC SERVICE ACCOUNT RECORD forms and check your purchases and replacements for a month, a quarter or a year. Address your request to Dept. 18-K

For best results, always use a B-D Needle with a B-D Syringe.

BECTON, DICKINSON AND COMPANY, RUTHERFORD, N. J.

Industrial Health

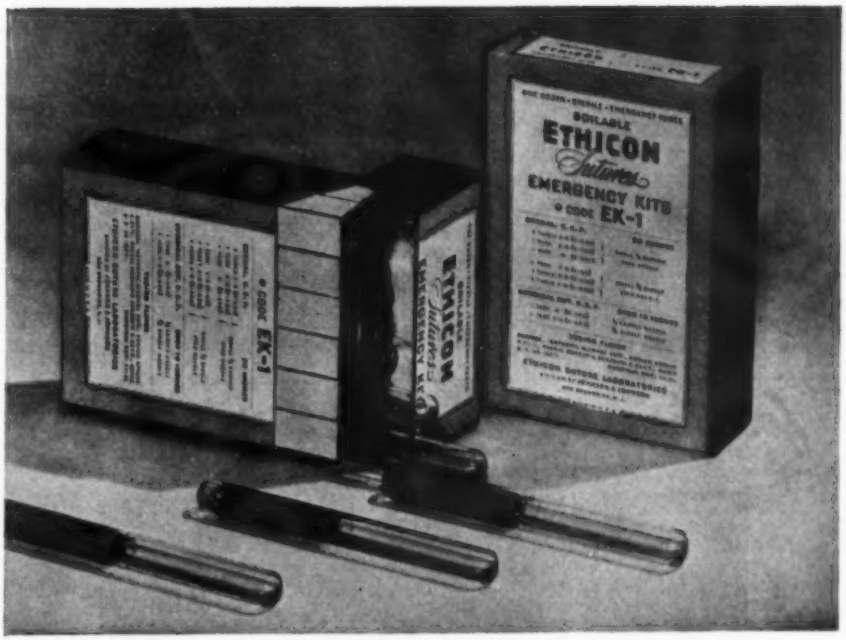
THE First Rocky Mountain Conference on Industrial Health will be held in the Denver Chamber of Commerce Building, Denver, October 31, November 1 and 2, inclusive. This Conference is sponsored by the Division of Industrial Medicine at the University of Colorado School of Medicine, the Colorado State Department of Health, Colorado Manufacturers Association, Colorado Chamber of Commerce, and the Denver Chamber of Commerce. Five sessions, which will run successively, have been planned and these sessions are open to company executives, company attorneys, safety engineers, personnel managers, and plant physicians. The purpose of the Conference is to inform the various representatives of industry, both large and small, concerning the need for and the purpose of industrial health programs. Those attending are invited to bring to these meetings specific questions and problems whch will be answered by a panel of experts. Guest speakers at dinner on November 1 to be announced. Address further inquiries to: Chairman of the Program Committee, FRANK PRINCI, M.D., First Rocky Mountain Conference on Industrial Health, 4200

East Ninth Avenue, Denver, Colorado.

The Common Cold

ALTHOUGH some yet unidentified virus is generally believed to be the cause of the common cold. the role of contributory factors, such as exposure to cold or fatigue, is still obscure. Fox and Livingston believe that allergy is an important factor in the susceptibility to colds. Allergic conditions, they point out, are frequently initiated or exaggerated by a fall of temperature and increased humidity. The mechanism of this reaction is probably related to increased permeability of a susceptible membrane, allowing the antigen to contact its specific reagin in the cell more readily. The common cold is an allergic response in susceptible persons to contact with a specific protein, which is the cold virus or its products. The diminished capacity to maintain effective circulation and to tolerate sudden fall of temperature exhibited by the cold-susceptible patient is often observed in allergic patients. The response of the allergic person to these environmental factors results in an outpouring of histamine into various shock centers, particularly into the respiratory tract, in sufficient quantity to weaken the local defense mechanism, preparing these tissues for acceptance of the virus of the common cold or of secondary invaders. The authors in 1940 reported a study of 1,200 cold-susceptible persons which revealed that 80% of these persons had various allergies or came from allergic families. In a recent communication these studies embraced over 3,000 persons. The most common pathologic change observed in the upper respiratory tract of cold-susceptible persons is hyperplasia of the mucosal and lymphoid tissues. These patients suffer constantly from postnasal drip and mouth breathing due to nasal intumescence, frequent sore throat, attacks of laryngitis, and stomatitis. The person with hyperplastic tissues hghly susceptible to colds rarely has a cold lasting only four to five days. Almost invariably a secondary infection of the sinuses develops, lasting three to six weeks. Apparently, the mucosa must be injured specifically by the virus to cause these long colds. The cold-susceptible patient often presents a borderline or subclinical rather than the frank type of allergy.

—*J.A.M.A.*, September 10, 1949.



Emergency Sutures

This compact emergency kit contains a practical assortment of sutures for the types of closure usually encountered in industrial surgery.

All made to Ethicon's high standards of quality and workmanship.

Order from Your Surgical Dealer

ETHICON Sutures

ETHICON SUTURE LABORATORIES

DIVISION OF JOHNSON & JOHNSON, NEW BRUNSWICK, N. J.

Tenth Congress

THE TENTH Annual Congress on Industrial Health will be held at the Roosevelt Hotel, New York City, February 20 and 21, 1950.

DR. PILGRIM

NOW CONCERNED with various questions in regard to the adjustment of medical services in organizations where there has been apparent necessity for de-

creased production and consequently decrease of employment; and also, in the same category, consideration of medical and health services where there have been strikes.... AND then at the office and busy with depositions in a number of compensation cases in which there had been considerable dust exposure but no development of occupational disease .... AND in the meantime listening to ex-President Herbert Hoover on his 75th birthday and enjoying very much the logic of his address—especially with reference to the important subject of governmental economics.... AND in conference, studying a host of references with respect to the effect of wood dust on human lungs and discovering, after searching many reports and reading with a great deal of interest a great many cross-references, that there seems to be very little data on the subject, even after 25 years of experience with dust exposures and their effects.... AND meanwhile conversing with some city officials by long distance with reference to community air pollution surveys and their possibilities and results.... AND enroute to eastern Missouri, contacting industrial officials, inspecting factories, viewing x-rays and going over clinical histories with respect to later detailed surveys, and here finding differences of opinion with reference to the interpretation of clincal material and x-ray findings, after dust exposures of various kinds and for long periods of time .... AND now checking beryllium references and discussing the possibilities of evidence in a medico-legal case, after a number of long distance telephone conversations and the reviewing of file material; and meanwhile concerned with reviewing editorial material on the perennial problems of legislation.... AND reading "The Governing of Men," by Alexander H. Leighton (Lt. Commander U.S.N.R.), which is a distinguished contribution in terms of human relationships, referring particularly to experiences at the Japanese relocation center at Poston, Arizona —the first part being a clinical account of the strike at this relocation center and the attitudes, tensions, and frustrations of both the administrators and the administered; and the second part being on general principles and recommendations, the material, of course, being drawn from other sources besides the center itself; and reading, among the important and "revealing" portions of this book, the following example: "The greatest promise, however, for men and their government, in stress and out of it, is an infusion of administration and science to form a common body of thought and action which is not only realistic in the immediate sense of dealing with everyday needs, but also in the ultimate sense of moving forward in discovery and improved practice. This requires an administration with a scientific philosophy which employs as

for the successful treatment of...

LEG ULCERS

the DAXALAN-DOME-PASTE BANDAGE TECHNIQUE...

as introduced by Dr. William M. Cooper

Director, Department of Peripheral Vascular Diseases—New York Polyclinic Medical School and Hospital

This technique is based on a 3 point program

1. Reduce the dermatitis with wet dressings of DOMEBORO TABS (Burow's Solution)
2. Combat local infection and stimulate healing with thick application of DAXALAN in the center of the ulcer and surrounding areas
3. Overcome venous insufficiency, statis, and edema by wrapping DOME-PASTE BANDAGE (Unna's Boot) around the entire leg to supply compression

for INDUSTRIAL DERMATOSES

Do What Dermatologists Do *First* in Treating INFLAMMATORY CONDITIONS OF THE SKIN!

Use a Wet Dressing... and

the wet dressing of choice is DOMEBORO TABS. Promotes faster healing because DOMEBORO solution remains in a state of constant ionization, thus rendering it capable of correcting variations in the pH values of the skin.

DOMEBORO

is the trademark for the patented, modernized form of basic

ALUMINUM ACETATE

BURROW'S SOLUTION (1:20)

DOMEBORO TABS are listed on page 376 of the "Manual of Dermatology" issued under the auspices of the National Research Council as "Burow's Solution-Domeboro Tabs"

DOCTOR! You may now prescribe SOOTHING Modernized — Simplified Fresh and Stable BUROW'S SOLUTION 1:20 in four forms DOMEBORO Tablets • Packets • Powder Ointment Write for samples and reprints from medical literature

DOME CHEMICALS, INC.

250 EAST 43rd STREET • NEW YORK 17, N.Y.

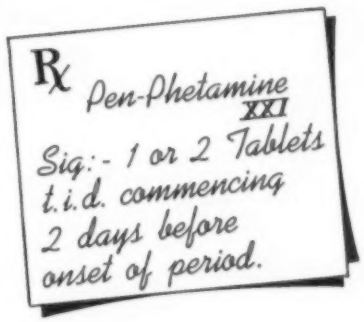
its theme of reference culture's accumulated knowledge regarding the nature of man and his society. Such an administration would have stated principles of operation thoroughly familiar to all its members and generally available for others to see. These principles would, however, be subject to revision on the basis of systematic and general observation in which the members of the administration participated. Thus, hypotheses and supposed constants would be tested as in natural history by multiple, careful observations. The administration would be geared, not to exploitive or irresponsible experimentation, but to utilizing to the full the experiments constantly being performed by nature—by changing circumstances and the actions in relation to them which have to be taken" .... AND sojourning to Ohio and Pennsylvania, again being concerned with problems of advising with management on industrial hygiene exposure problems, and, as before, going over x-ray films and clinical histories—with here, again, a matter of differences of professional opinion with respect to dust effects and the basic principles of differential diagnosis and clinical course .... AND coming through Pittsburgh, having dinner with DICK WALMER and much conversation about things hygiene-wise .... AND taking time off for recreation and vacation periods in the form of long week-ends, one of these being at the Country Club where watching Patty Berg in a demonstration of various types of golf shots, interspersed with so-called "corny comedy," at whch she is most adept—here Miss Berg emphasizing the various points by the caricaturing of poor technique, reminding one of the same sort of examples which George Dasch uses in his directing of the Chicago Business Men's Symphony Orchestra, in similar exaggeration and imitation of poor musical techniques .... AND as part of the holiday routine, a ride around the south side with the KALMES family, seeing the children and grandchildren, all of which was very enjoyable .... AND to northern Indiana to take various types of dust samples in an industry which has had little or no experience with such exposures, there being of course the usual number of opinions based upon conjecture rather than on facts—which is only natural where experience is lacking .... AND coming now to the so-called "summer's end" which is supposed to be officially timed after Labor Day—nevertheless enjoying the outdoors and watching lawn bowling at the Country Club and a spirted tennis match for the finals of the men's singles, and a little later the presentation of all the tennis trophies for the season, among which many youngsters participated ....AND now back to the desk and concerned with many reports, references, manuscripts, and problems relating to hygiene, medicine and law, and lately summarizing some of the work on medical relations in workmen's compensation in preparation for statements and reports which appear to be most interesting, at least in the preliminary stages.

FORMULA

Each tablet contains . . .

***PROFETAMINE PHOSPHATE . 3 mg. ► ELEVATES MOOD**
ACETYLSALICYLIC ACID . . . 5 gr. ► ANALGETIC
PHENOBARBITAL . . . . . ⅓ gr. ► SEDATIVE

PEN-PHETAMINE has been used extensively in industry for the control of dysmenorrhea and the prevention of absenteeism attributable thereto. It has also been found of particular value in the symptomatic relief of SINUS HEADACHE, neuralgia, and other types of pain not associated with organic disease.



AVAILABLE—
Bottles of 100 tabs $1.75
" " 1000 " $9.75

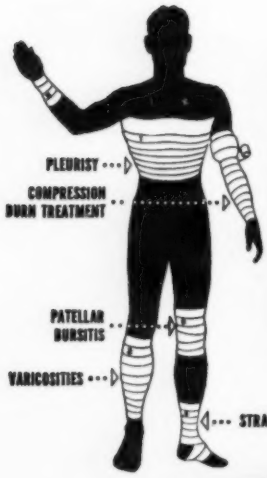
★(Monobasic amphetamine phosphate racemic)
U. S. Patent Pending

SAMPLES AND LITERATURE, OF COURSE

Obtainable through all leading pharmacies and surgical dealers, or order direct from:

CLARK & CLARK ★ WENONAH, N. J.

PIONEERS in AMPHETAMINE PRODUCTS for OBESITY



IN VIEW OF THE EXCELLENT RESULTS OBSERVED...

Recommend

TENSOR* ELASTIC BANDAGE

WOVEN WITH Live Rubber THREAD

for Any Elastic Bandage Use!

Whatever the clinical picture . . . whatever the technic . . . when pressure-dressing therapy is indicated, TENSOR gives outstanding performance.

More and more pnysicians are recommending and using TENSOR ELASTIC BANDAGE for compression burn treatment, varicosities, pleurisy and sprains. Here's why . . .

1. **TENSOR** exerts *controlled*—evenly-distributed pressure.
2. **TENSOR** has *uniform elasticity.* "Holds" without causing harmful or painful constriction.
3. **TENSOR** *stays put*—permitting greater mobility, yet does not require frequent adjustment.
4. **TENSOR** is inconspicuous, lightweight and porous.
5. **TENSOR** not only has greater initial stretch than any rubberless bandage—but *stays* elastic, despite repeated laundering.

TENSOR is available in 2, 2½, 3, 4 and 6-inch widths by 5½ yards stretched.

For Your Patients' Support and Comfort Prescribe Bauer & Black Elastic Products

Suspensories • Abdominal Belts • Supporters • Knee Caps
Anklets • Elastic Bandages • Supporter Belts • Elastic Stockings

*Reg. U. S. Pat. Off.

BAUER & BLACK

Division of The Kendall Company, Chicago 16

FIRST IN ELASTIC SUPPORTS

Advertisers Index

Abbott Laboratories 21
American Meat Co. 39
American Optical Co. 17
American Sterilizer 23
Bard Parker 12
Bauer & Black.....22, 56
Becton Dickinson Co. 32
Bristol Myers Co. .....
.....3rd cover and 11
Carbisulphoil Co. 40
Cereal Institute 14
Ciba Pharmaceuticals 4th cover
Clark & Clark.....29, 35
Commercial Solvents....27, 31
Denver Chemical Mfg. Co. 13
Desitin Chemical Co. 28
Dionol Pharmacal Co. 36
Dome Chemicals, Inc. 34
Eaton Laboratories..2nd cover
Ethicon Suture Laboratories 33
E & J Co. 40
Industrial Medicine Book Co. 37
Lilly, Eli and Co. 24
Merck & Co., Inc. 16
Nepara Chemical Co. 18
Packwood, G. W. Mfg. Co. 38
Philip Morris & Co. 42
Picker X-Ray Corp. 2
Plaut Products 40
Professional Mail Order....36
Raytheon Mfg. Co. 26
Schenley Laboratories 5
Schering Corp. 1, 9
Scholl Mfg. Co. 30
Shield Laboratories 41
Smith, Kline & French....19
Standard Pharmaceuticals..40
Upjohn Company 15
West Disinfecting Co. 25
Winthrop Stearns 20
Wyeth, Inc. 7

Industrial BURN CASES
Slow & Non-Healing WOUNDS
usually respond quickly to
DIONOL
OINTMENTS
Write for samples
DIONOL PHARMACAL COMPANY
Kalamazoo 11, Michigan

Books Personal Items

Books of all publishers applicable to the

INDUSTRIAL PHYSICIAN

INDUSTRIAL SURGEON

INDUSTRIAL NURSE

Catalogue sent upon request

PROFESSIONAL MAIL ORDER, INC.

Michigan Avenue at 15th St.

Chicago 5, Illinois

Books of Permanent Worth

—Carey P. McCord

A BLIND HOG'S ACORNS—*Vignettes of the Maladies of Workers*

"....dramatizes and enlivens the industrial health field in a series of charming stories, reflecting the vast importance of this field, while entrancing the reader with the art of the true raconteur....This little biographical book tells the industrial preventive medicine story with an effectiveness that ranks with 'An American Doctor's Odyssey,' 'Plague on Us,' and 'Yellow Jack.'"

311 PAGES; ILLUSTRATIONS BY STROBEL; $2.75.

—T. Lyle Hazlett

INTRODUCTION TO INDUSTRIAL MEDICINE

The long awaited Textbook of Industrial Medicine—endorsed by The American Association of Industrial Physicians and Surgeons—nineteen chapters, each by an outstanding expert—invaluable in every phase of industrial medical practice.

253 PAGES, WITH ILLUSTRATIONS AND SUBJECT INDEX; $3.00.

—Biographical Dictionary

WHO'S WHO IN INDUSTRIAL MEDICINE

Career Data on the Medical Directors, Company Surgeons, Plant Physicians, Consultants, Advisers, Specialists in Industrial Medicine and Surgery and Hygiene, Industrial Doctors. Alphabetically listed with Geographical Index. This is the authoritative Desk Book so essential for all kinds of reference. Answers every question of WHO and WHERE. "....up to date with an intimate cyclopedia of American biography in this field." $10.00.

ORDER FROM

INDUSTRIAL MEDICINE BOOK CO.

605 N. Michigan Ave., Chicago 11, Illinois.

Test of Greatness

AUGUSTUS

About 18 B. C.

Braccio Nuovo, Vatican Museum, Rome

"This majestic, truly princely figure . . ."[1] has come down to us through 2000 years as " . . . the most famous of all the statues of the emperor Augustus."[2] "Discovered in 1862 . . . on the ancient Via Flaminia under the ruins of the villa of Livia . . ."[3] this splendid marble masterpiece has become universally renowned as " . . . one of the finest examples of Roman portrait sculpture."[2]

Regardless of the passage of time, any of man's achievements which maintain an enviable reputation for lasting greatness must be the result of constant and painstaking effort for perfection. The fact that Pax Heavy Duty has held its eminent position among occupational skin cleansers, since its origination more than a quarter century ago, is ample evidence of its superb merit. That is why most of the largest industries in America continue to rely, year after year, on the protection and satisfaction this outstanding product provides for their millions of productive workers.

[1] Augustus, by Suetonius
[2] Greek and Roman Sculpture, by A. Furtwangler and H. L. Urlichs
[3] Naturalis Historia, by Pliny the Elder

PAX

PAX-LANO-SAV HEAVY DUTY GRANULATED SKIN CLEANSER

There is Nothing Finer For All General Occupational Skin Cleansing

PAX-LANO-SAV*—a superior skin emollient combining lanolin and other special skin normalizers.

49 J

What Is The PRICE FACTOR of PAX?

ADVERTISED IN AMERICAN MEDICAL ASSOCIATION PUBLICATIONS

PAX-LANO-SAV EMOLLIENT was developed in our Research Laboratory after years of intensive research. It is superior to lanolin alone because it skillfully combines generous quantities of lanolin PLUS other fine skin normalizers making PAX-LANO-SAV EMOLLIENT more effective in a skin cleanser. Integrated into PAX-LANO-SAV HEAVY DUTY Granulated Skin Cleanser in abundant quantity, PAX-LANO-SAV EMOLLIENT helps to protect the natural acid mantle of the skin during the wash. Skillful formulation of PAX-LANO-SAV HEAVY DUTY Granulated Skin Cleanser, remarkable cleansing ability, quick profuse suds and great bulk assure exceptional economy together with real satisfaction in use. Because it always stays free-flowing it may be used in the usual commercial dispenser for powdered soap.

G. H. PACKWOOD MANUFACTURING CO. • 1545-55 TOWER GROVE AVE. • ST. LOUIS 10, MO.

Manufacturers of Fine Industrial Skin Cleansers

® Trademark Reg. U. S. Pat. Off.

*Tradename of G. H. Packwood Mfg. Co.

In addition to PAX-LANO-SAV HEAVY DUTY, PAX also offers the following powdered or granulated quality skin cleansers: PAX CORN-TEX • PAX HYSPEED • DICTATOR SPECIAL PURPOSE • BORAPAX • SUPER-X • VELVAPAX LIGHT DUTY • OFFICE-PAX • PAX MECHANICS. Also available are PAX WATERLESS and PAX HECTO INK CLEANSING CREAM • PAX SKIN CLEANSER ECONOMIZER DISPENSERS • and many other fine PAX Products.

The Importance of Meat To Your Geriatric Patients

That a significant number of elderly persons suffer from a deficiency of protein, iron, B complex vitamins, and calcium is the consensus of most geriatrists. Depending upon the extent and duration of these nutrient deficits the well-being and stamina of the individual are undermined, not infrequently to the point where the presence of organic disease may be suspected. Furthermore, nutrient deficiencies of long standing lower resistance to infectious disease and appreciably increase the hazards of surgery.

Thorough evaluation of the dietary of aged patients with particular emphasis on protein, iron, B complex vitamins and calcium, and institution of indicated adjustments in dietary habits can produce results gratifying to both patient and physician. Meat, an important source of biologically complete protein, iron, and B complex vitamins, has earned a deserved position in the dietary of elderly persons as well as in the dietary of younger individuals. Rarely contraindicated even in the presence of cardiovascular or renal disease, meat leads to virtually no alimentary difficulties since the more tender cuts are digested with particular ease. In the presence of mastication impairment ground meat may be employed. A serving or two of meat daily in the dietary of the aged goes far in preventing nutrient deficiencies and can contribute significantly to health and well-being.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

American Meat Institute
Main Office, Chicago...Members Throughout the United States

FOR MAKING
WET DRESSINGS
LIKE BUROW'S SOLUTION
U. S. Pat.

PRESTO-SOL TABLETS

PATENTED FORM

For more rapid healing by their antipruritic, decongestive action • Accurate uniform dosage • No distilled water required • A valuable addition to Medicine Chests and First Aid Kits • Antiseptic • Astringent • Stable • No Lead • Economical • Accepted by U.S. Army & Navy •

STANDARD PHARMACEUTICAL CO., INC., 1123 Broadway, New York

NUCARPON®
Compound Charcoal Tablets for Intestinal Dysfunction.

•

VALERIANETS-DISPERT®
Odorless Herbaceous Chocolate-coated Tablets for BETTER Sedation.

•

TRANSPULMIN®
In Pulmonary and Bronchial Conditions.

FOILLE
EMULSION
for
BURNS
MINOR WOUNDS
LACERATIONS
ABRASIONS

Now Appearing Under a NEW LABEL

The same dependable medication, famous for many years, now bears a more descriptive and informative label. As always in the past, its . . . .

"FOILLE FIRST IN FIRST AID"

Available now through all distributors.

CARBISULPHOIL COMPANY
3116 SWISS AVE. DALLAS, TEXAS

KEEP 'EM CLEAN
WITH
ORIGINAL Kast-soc K
TRADE MARK PAT. APPLIED FOR U.S.P.O.

SPECIALLY DESIGNED FOR WALKING CASTS

Kast-Socks offer a simple solution for your patients who object to a soiled walking cast. Kast-Socks will protect the toes and keep the cast clean.

Kast-Socks are made of fine white cotton yarn, reinforced at all points of strain for long wear. Elastic is inserted at top and around heel opening. Kast-Socks are easily stretched . . . . can be pulled on or off quickly.

You and your patients will appreciate the neatness and convenience offered by Kast-Socks. See for yourself. Write on professional letterhead for sample and literature.

PLAUT PRODUCTS 149 W. Fourth St. Cincinnati 2, Ohio
Eastern Distributor
UPSHER & COMPANY, 122 E. 42nd St., New York 17, N.Y.

SAVE WORKERS' LIVES
COMBAT DISABILITY
with an
E & J RESUSCITATOR

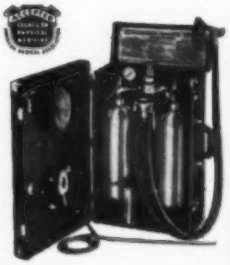
Manual resuscitation, adequate in some uncomplicated respiratory emergencies, is frequently *not* adequate when suffocation, drowning, or crushing is accompanied by throat obstructions, extensive burns, or internal injuries.

Your plant can be prepared for these serious cases—as well as those less complex—with an E & J resuscitator-aspirator-inhalator, providing the *maximum* protection in breathing emergencies that is available today.

A demonstration and complete information—including authoritative clinical evidence—is yours, with no obligation. Write Dept. D, E & J, Glendale 1, California—or phone the nearest E & J office.

This "automatic breathing machine" has a remarkable record of lives saved, is now in use in thousands of industrial installations, hospitals, and fire departments.

E&J RESUSCITATOR-ASPIRATOR-INHALATOR



E&J MANUFACTURING CO.
GLENDALE 1, CALIFORNIA
Sales, Service Centers: Philadelphia, Pittsburgh, Chicago, Boston, New York City, Oakland, Seattle, Salt Lake, Detroit, San Antonio.

PSORIASIS

treated locally with RIASOL

Many dermatologists agree in recommending local treatment with RIASOL to eradicate the scaly patches of psoriasis. Their experience has proved its value.

For years RIASOL has been the first choice of many physicians for local treatment of psoriasis. Quick fading of the ugly scaling skin patches usually follows its use in a few weeks. Continued use of RIASOL after the lesions have disappeared may avoid recurrences.

RIASOL contains 0.45% mercury chemically combined with soaps, 0.5% phenol and 0.75% cresol in a washable, non-staining, odorless vehicle.

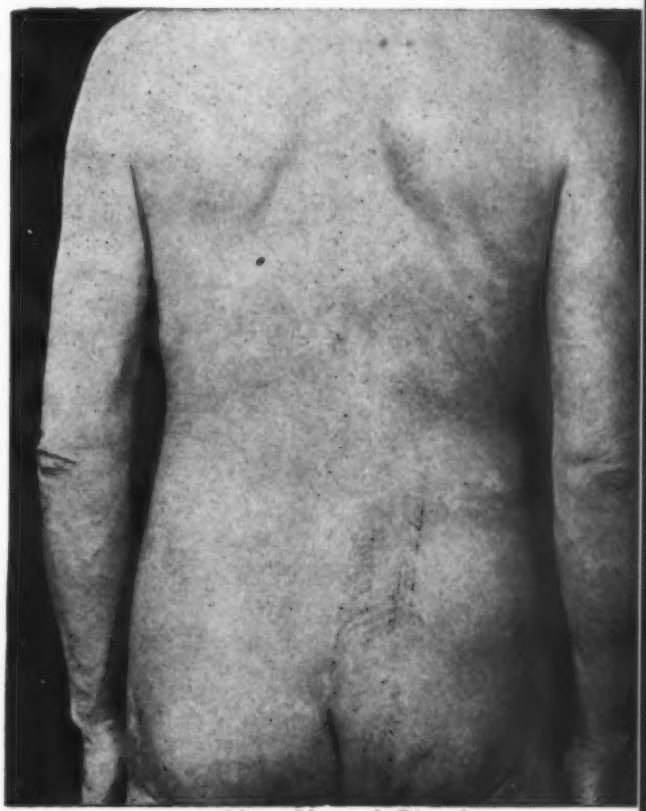
Apply daily after a mild soap bath and thorough drying. A thin, invisible, economical film suffices. No bandages necessary. After one week, adjust to patient's progress.

RIASOL is ethically promoted. Supplied in 4 and 8 fld. oz. bottles at pharmacies or direct.

Mail coupon today for your free clinical package. Prove RIASOL in your own practice.

MAIL COUPON TODAY —
PROVE RIASOL YOURSELF

Before Use of Riasol



After Use of Riasol

SHIELD LABORATORIES IM-10-49
12850 Mansfield Avenue, Detroit 27, Michigan

Please send me professional literature and generous clinical package of RIASOL.

_____ M.D. _____ Street

City _____ Zone _____ State _____

Druggist _____ Address _____

RIASOL for PSORIASIS

THIS SUGGESTION MAY BE OF VALUE FOR YOUR THROAT PATIENTS:

When cigarette smoking is a factor in throat irritation, many leading nose and throat specialists suggest* to their patients a choice of 3 alternatives:

1. Stop Smoking,
2. Smoke less,
3. *Change to* Philip Morris!

• Philip Morris is the *only* cigarette proved definitely and measurably less irritating!** Perhaps you too will find it worth while to suggest "*Change to* PHILIP MORRIS."... by far the wisest choice for everyone who smokes.

PHILIP MORRIS

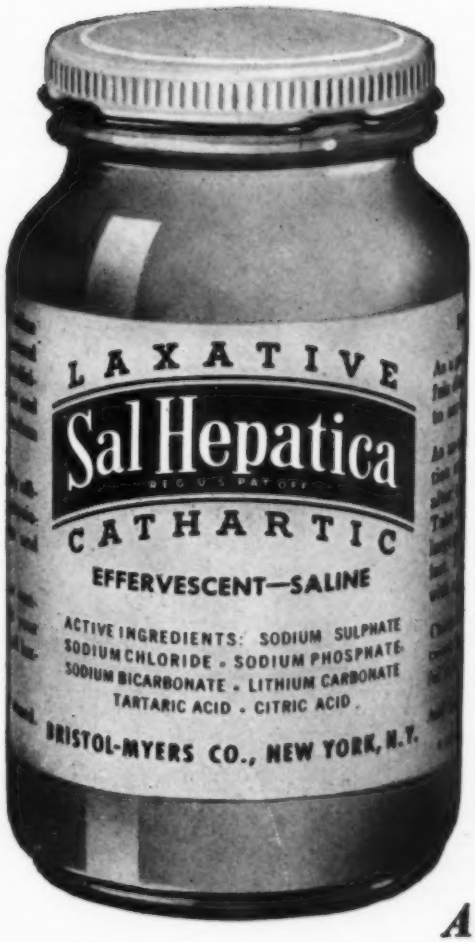
Philip Morris & Co., Ltd., Inc.
119 Fifth Avenue, N. Y.

DO YOU SMOKE A PIPE? We suggest an unusually fine blend — COUNTRY DOCTOR PIPE MIXTURE. Made by the same process as used in the manufacture of Philip Morris Cigarettes.

*Completely documented evidence on file.
**May we send you copies of these published studies:

Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154; Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60; Proc. Soc. Exp. Biol. and Med., 1934, 32-241; N. Y. State Journ. Med., Vol. 35, 6-1-25, No. 11, 590-592.

Gentle
Pleasant
Prompt



A pleasant, effervescent saline laxative which acts by osmosis to produce soft fluid bulk . . . stimulates peristalsis . . . promotes prompt but gentle evacuation.

Aperient*

Laxative*

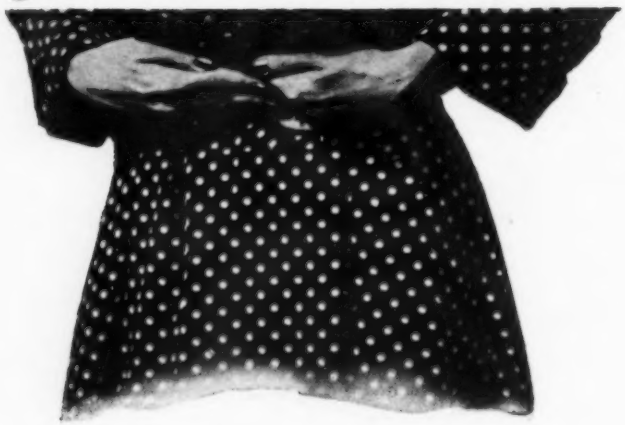
Cathartic*

Product of **BRISTOL-MYERS • 19 West 50th Street, New York 20, N. Y.**

**Average dose*

TRASENTINE-PHENOBARBITAL

a powerful antispasmodic...with selective action
avoiding undesirable side effects



Effective relief of visceral spasm is generally obtained with Trasentine or Trasentine-Phenobarbital. By its selective action, Trasentine avoids the undesirable side effects of dryness of the mouth and pupillary dilatation frequently produced by belladonna or atropine. These advantages have caused physicians to prescribe more Trasentine and Trasentine-Phenobarbital than probably any other brand of antispasmodic.

● Average adult dose is one or two tablets 3 or 4 times daily as required.

TRASENTINE-PHENOBARBITAL — Tablets (yellow) contain 50 mg. Trasentine hydrochloride with 20 mg. phenobarbital, in packages of 100 and 500.

TRASENTINE — Tablets (white) of 75 mg., in bottles of 100 and 500; also suppositories of 100 mg., and ampuls of 50 mg.

Ciba PHARMACEUTICAL PRODUCTS, INC., SUMMIT, NEW JERSEY

TRASENTINE (brand of adiphenine)—Trade Mark Reg. U.S. Pat. Off. 2/1431M